**A study to assess the knowledge, attitude, and practices about blood donation among medical students of a medical college in North India**

**Renu Chauhan¹, Rajesh Kumar², Supriya Thakur³**

Departments of ¹Community Medicine and ²Dr. RPGMC, Kangra (Tanda), ³Department of Plastic Surgery, IGMC, Shimla, Himachal Pradesh, India

**Abstract**

**Introduction:** Scarcity of blood and blood products is frequently encountered in health care institutions. Medical students can serve as an important pool of potential blood donors for the attached teaching hospitals. **Aim:** To determine the knowledge, attitude and practices (KAP) of medical students about voluntary blood donation. **Settings and Design:** It was a cross-sectional study conducted among medical students of Dr RPGMC Tanda in Himachal Pradesh, in the months of August to December, 2015. **Material and Methods:** All the students present on the day of the survey who expressed their consent for participation were enrolled in the study. A pre-tested, structured questionnaire was used as a study tool. After the collection of the baseline information, a brief interactive awareness session, addressing voluntary blood donation was organized for the participants and their willingness to donate blood was again noted at the conclusion of the session. The data was analyzed by using SPSS software. **Results:** 235 students participated in the study, 102 (43.4%) males and 133 (56.5%) females. The mean age was 20.42 ±1.38 years. **Knowledge of Voluntary Blood Donation:** The mean knowledge score of participants was 74.4%. Overall 225 (95.7%) participants were aware of their blood groups. **Attitude related to blood donation:** 91% study participants felt that people should donate blood and were themselves willing to donate blood. **Practice Relating to Blood Donation:** Out of the 235 study participants, only 54 (22.9%) had donated blood so far. Willingness to donate blood after interactive awareness session increased from 91% to 97.5%. **Conclusion:** The study population has relatively good knowledge and a favourable attitude about voluntary blood donation. However the prevalence of blood donation among the students is still low, especially among the girls.

**Keywords:** Blood donation, medical students, voluntary

**Introduction**

Human blood is essentially a vital, lifesaving component, capable of saving millions of lives if ready availability can be ensured. According to the World Health Organization (WHO), at least 1% of the nation's population should donate blood voluntarily to meet the basic requirement for blood and blood products.[i] The WHO theme “Safe blood starts with me, blood saves lives.” for 2000 AD, also stressed on the need for voluntary blood donation by healthy people. The focus was on encouraging 100% nonremunerated, voluntary blood donation from donors of low-risk populations so as to decrease the risk of spread of transfusion-associated infections.[ii] In India, there is a need of about 8 million units of blood every year out of which only about one-third are obtained from voluntary donors.[iii] Replacement donors or family donors are people who donate blood to their family, friends, and relatives in time of need and account for approximately 45% blood donations in India.[iv] The WHO stresses the fact that replacement blood donation needs to be discouraged and replaced by voluntary, nonremunerated blood donation.

**Address for correspondence:** Dr. Renu Chauhan, Department of Community Medicine, Dr. RPGMC, Tanda, Kangra - 176 001, Himachal Pradesh, India. E-mail: docrenuchauhan@gmail.com

**Access this article online**

Quick Response Code:  
Website: www.jfmpc.com  
DOI: 10.4103/jfmpc.jfmpc_54_17

**How to cite this article:** Chauhan R, Kumar R, Thakur S. A study to assess the knowledge, attitude, and practices about blood donation among medical students of a medical college in North India. J Family Med Prim Care 2018;7:693-7.
donation. Paid/professional blood donation has been banned in India since January 1998.

Blood scarcity is frequently encountered in health-care settings and is attributable to an imbalance between increasing demand for safe blood and blood products on the one hand and failure to organize regular blood supply due to misconceptions, perceived harms and risks, and lack of motivation among potential donors. Medical college students can serve as a readily available pool of voluntary blood donors for the attached medical college hospitals and help tide away some of the scarcity of blood and blood products. However, different studies involving medical students have expressed concern on the low level of awareness and unsatisfactory voluntary blood donation practices among them. Some studies have also shown poor blood donation practice among the students in spite of relatively good knowledge and favorable attitude toward voluntary blood donation. The prevalence of voluntary blood donation is reported to be even lower among the females. Thus, there is a need to explore the different factors that can contribute toward voluntary blood donation.

Knowledge, attitude, and practice (KAP) studies are a commonly used tool to investigate various aspects of human behavior. By assessing what people know (knowledge), how they feel about it (attitude), and what they actually do based on their knowledge and attitude (practice), the investigator is better able to appreciate the outlook of the people regarding behavior and suggest relevant remedial measures. KAP studies have been frequently used to explore the domain of voluntary blood donation. The common areas explored are reasons for donating/not donating blood; sources of knowledge; motivating/demotivating factors for voluntary blood donation; the impact of peer structure on potential donors, etc.

Dr. Rajendra Prasad Government Medical College in district Kangra of Himachal Pradesh provides services to the predominantly rural and tribal populations of Kangra and the adjoining districts of the state. The medical students can be encouraged for voluntary nonremunerated blood donation. However, no study has been conducted in this region to assess the KAPs pertaining to blood donation among the medical students. Hence, this study was conducted with the aim to assess the knowledge gaps, attitude, and blood donation practices of these students and motivate them toward becoming regular, voluntary blood donors.

**Aims and objectives**

1. To determine the KAPs regarding voluntary blood donation among medical undergraduate students
2. To impart health education to MBBS students regarding voluntary blood donation
3. To assess the anticipated increase in the willingness to donate blood following a one-time health education intervention.

**Materials and Methods**

The study was conducted among undergraduate medical students of Dr. Rajendra Prasad Government Medical College, Kangra, in Himachal Pradesh, from July to December 2015. It was a cross-sectional, observational study. A pretested, structured questionnaire was used as a study tool. Appropriate changes were made in the schedule taking into account the experiences of the pretest. The questionnaire consisted of four sections. Section A was designed to collect socio-demographic information such as age, gender, class/year of study, and religion. Sections B, C, and D contained items about the KAPs of undergraduate medical students regarding blood donation.

**Sample size**

Since one of the objectives of the study was to educate the students about blood donation, hence all the students present on the day of the survey who expressed their consent for participation were enrolled in the study.

**Study methodology**

The nature and purpose of the study was explained to all students who were present in the respective classroom on the day of survey, and an informed consent for participation was taken. All those who expressed their consent to participate in the study were enrolled in the study. For data collection, a pretested, close-ended, structured questionnaire was distributed to the study participants. Basic information such as sociodemographic data and information regarding KAPs of blood donation was elicited using the same questionnaire. After the collection of the baseline information, a brief interactive awareness session, along with a detailed PowerPoint presentation addressing voluntary blood donation, was organized for the participants and their willingness to donate blood was again noted at the conclusion of the session.

**Data analysis**

The data were entered in and analyzed using the IBM SPSS Statistics for Windows, version XIX (IBM Corp., Armonk, N.Y., USA).

**Consent and ethical issues**

The approval of Institutional Ethics Review Committee was taken before starting the study.

**Results**

A total of 235 students participated in the study, of whom 102 (43.4%) were male and 133 (56.5%) female. The age range was 17–25 years, the mean age being 20.42 ± 1.38 years.

**Knowledge of blood safety and donation**

The knowledge of blood donation was assessed by questions assessing general knowledge about blood donation, knowledge of criteria for donor selection, and knowledge regarding infections that can be transmitted through transfusion of contaminated
blood. The responses of the study participants to questions assessing the knowledge are summarized in Table 1.

**Knowledge of their own blood groups**

Two hundred and twenty-five (95.7%) participants were aware of their blood groups. Only 10 (4.3%) students were still unaware of their blood groups. The most common blood group reported was B (33.7%), O (29.4%), A (26.3%), and AB (10.6%). About 96% reported Rhesus antigen positive and 4% were Rh−ve. The distribution of the blood groups as reported by the students is summarized in Table 2.

### Table 1: Knowledge of blood safety and donation

| Questions                                      | Correct response (%) |
|------------------------------------------------|----------------------|
| General knowledge about blood donation         |                      |
| 1. Knowledge of own blood group               | 95.7                 |
| 2. How frequently can a person donate blood   | 58.7                 |
| 3. Volume of blood collected during each blood donation | 62.9               |
| 4. Approximately time taken for blood donation| 64.6                 |
| 5. Universal donor                            | 98.2                 |
| 6. Universal recipient                        | 98                   |
| Knowledge regarding criteria for a blood donor |                      |
| 1. Age between 18 and 60 years                | 95                   |
| 2. Hemoglobin >12.5 g/dl                      | 89                   |
| 3. Body weight >45 kg                         | 84                   |
| 4. Treated for rabies/hepatitis B in the past 1 year | 51                  |
| 5. Donated blood/treated for malaria in the past 3 months | 51                  |
| 6. Woman should not be pregnant/lactating    | 72                   |
| 7. Woman should not be menstruating           | 64                   |
| 8. Free from diabetes and heart disease       | 66                   |
| Knowledge regarding transfusion transmissible infections |        |
| 1. Can a person be infected by receiving blood transfusion | 96                |
| 2. Transfusion-transmissible infections        |                      |
| a. HIV                                         | 99                   |
| b. Hepatitis B                                 | 97                   |
| c. Hepatitis E                                 | 23                   |
| d. Malaria                                     | 66                   |
| e. Syphilis                                    | 57                   |
| Overall knowledge (%)                          | 74.4                 |

### Table 2: Distribution of blood groups as reported by the study participants

| Blood group | n (%) |
|-------------|-------|
| A−ve        | 1 (0.4) |
| A+ve        | 58 (25.6) |
| B−ve        | 1 (0.4) |
| B+ve        | 75 (33.3) |
| AB−ve       | 3 (1.3) |
| AB+ve       | 21 (9.3) |
| O−ve        | 4 (1.8) |
| O+ve        | 62 (27.6) |

The source of information regarding blood safety and donation

The common sources of information about blood donation reported by the participants were educational institutions such as school and college (74%), followed by television (36%), through blood donation camps (31%), newspapers (28%), internet (21%), friends (19%), and parents (17%). The findings are depicted in Figure 1.

### Attitude of study participants for blood donation

Almost 91% of study participants felt that people should donate blood and were themselves willing to donate blood. The results are summarized in Table 3.

### Practice relating to blood donation

Out of the 235 study participants, only 54 (22.9%) had donated blood so far. Of these, 38 (70.3%) were male and 16 (29.7%) were female. Thirty (55.6%) students had donated blood only once and 24 (44.4%) had donated more than once. Forty-five (83.3%) students were voluntary blood donors, 8 (14.8%) reported donating blood to friend/relative in need and were replacement donors, while 1 (1.8%) student reported donating blood to know his disease status on blood screening for diseases.

### Reasons for not donating blood

The current nondonors (n = 181) gave the following reasons for not donating blood [Table 4].

### Willingness to donate blood after interactive awareness session using a PowerPoint presentation

An interactive awareness session on voluntary blood donation was held for the students, following which their willingness to donate blood was reassessed. The overall willingness for voluntary blood donation increased from 91% to 97.5%, with 6 students still remaining unwilling for voluntary blood donation.

### Discussion

College students, especially from the health-care sector, have often been recruited for KAP surveys and blood donation sensitization programs globally. These studies reflect varying...
levels of knowledge and attitudes regarding blood donation. Devi et al. conducted a study to assess the KAP of medical students regarding blood donation and reported the proportion of students with adequate knowledge as 33.1%. However, a high proportion of students (89.8%) were reported to have expressed their intent to donate blood in future. Similarly, in a study conducted in Pondicherry, by Bharatwaj et al., among undergraduate medical students, incomplete knowledge about blood donation was reported. However, 85% of participants were willing to donate blood in future. The authors in both these studies have recommended holding regular continuing medical educations and seminars on voluntary blood donation for medical students to bridge the gap in knowledge, identify and remove misconceptions, and motivate them for regular, voluntary blood donation. Uma et al. reported a need for creation of opportunities to donate blood by holding frequent blood donation camps and to be well informed about blood donation, as the motivating factors for the recruitment of more donors. Kowsalya et al. reported knowledge about blood donation among medical students as 44.8%. While 62.6% of the nondonors expressed their desire to donate blood and showed a positive attitude toward blood donation, only 13.2% of participants were actually donating blood. All these studies have reported a low level of awareness among medical students about blood donation and even more unsatisfactory blood donation practices. However, a positive attitude toward blood donation is reported. Furthermore, a high level of willingness to donate blood in future is expressed in most of the studies. These findings highlight the need to hold regular teaching and training programs for medical students aimed at educating them about safe and voluntary blood donation so that the gaps in knowledge can be bridged and the willingness to donate blood can be translated into actual blood donation. Bachhitiya et al. stressed the need of holding interactive awareness sessions with the students and also reported field visits to blood donation centres to be highly effective in enhancing motivation toward voluntary blood donation. In a study by Kumari and Raina, the main reasons reported for not donating blood are fear of needles, the very sight of blood, concerns regarding adverse effects, disapproval of the family, and “never being asked to.” Similar concerns have been expressed by respondents in various other studies.

This study aimed to assess the KAPs relating to voluntary blood donation among medical students in one of the medical colleges in Himachal Pradesh. Two hundred and thirty-five students were enrolled in the study, out of which 43.4% were male and 56.5% were female. The study participants were found to have good overall knowledge about blood donation (74.4%). Similar findings have been reported by Kumari and Raina (81.5%) among college students in Jammu and in a KAP study among Thai students by Wiwanitkit. The participants in the present study had good knowledge about some donor selection criteria such as age range, minimum hemoglobin, and body weight required, however, showed a gap in knowledge about the criteria related to some common physiological (pregnancy, menstruation, etc.) and pathological states (diabetes, hypertension, hepatitis B, etc.). Similarly, even though the participants were well informed about transfusion transmissible infections such as HIV and hepatitis B, they lacked relative knowledge about modes of transmission of malaria, syphilis, etc. Hence, there is a need for organizing awareness generation activities regarding voluntary blood safety and donation for the medical students, so they improve their knowledge and are relieved of unnecessary fears and negative attitudes.

Awareness of one’s blood group is important because in time of emergency, quick arrangement of blood can be made for self and also for others. In this study, 95.7% of students were aware of their blood groups. Similar high level of awareness regarding blood groups has been reported by Devi et al., Nwabueze et al. (99.6%), and Agrawat et al. (96%). According to the students, the reasons for this high level of awareness regarding their own blood were that they were required to fill this information in their school health cards, and also, an experiment in physiology in medical college pertains to this. This finding re-emphasizes the role that teaching institutions can play in imparting knowledge and building positive attitude for voluntary blood donation.

The most common blood group in the present study was “B” (33.7%), followed by “O” (29.4%), “A” (26.3%), and “AB” (10.6%). About 96% reported Rhesus antigen positive and 4% were Rh “”. Our findings are in agreement with a study by Giri et al., in Maharashtra, and Chandra and Gupta in North India. The participants in our study represented all the common and ever rare blood groups. This finding suggests the need to motivate the students for voluntary blood donation and to get themselves registered with the blood bank so that in time of emergency and shortage of blood, especially the rare blood groups, they can be contacted for donation.

| Table 3: Attitude of study participants for blood donation |
|----------------------------------|-------------|-------------|-------------|
| Attitude                          | Yes (%)     | No (%)      | Not sure (%)|
| Do you think that people should donate blood | 91          | 4           | 5           |
| Would you like to donate blood in future | 91          | 4           | 5           |
| Do you think one can get infected while donating blood | 62          | 26          | 12          |
| Would you like to donate blood to only family members and friends | 16          | 84          | 0           |
| Would you like to donate blood to strangers in need of blood | 84          | 16          | 0           |

| Table 4: Reasons for not donating blood |
|---------------------------------------|
| Reason for not donating blood among current nondonors (n=181) |
|---------------------------------------|
| I was not approached to donate blood | 96 (53) |
| I am unfit to donate blood           | 57 (31.5) |
| Fear of needles                      | 22 (12.2) |
| I may need to donate for friends/relatives in future | 5 (2.8) |
| Fear of knowing disease status on screening for infections | 1 (0.5) |
The most common source of information about blood donation reported by the study participants was from educational institutions such as school and college (74%), followed by television (36%), through blood donation camps (31%), newspapers (28%), internet (21%), friends (19%), and parents (17%). This highlights the fact that more emphasis should be given to educational institution-based awareness programs for blood donation and the inclusion of this topic in school and college curriculum.

Nearly 91% of study participants felt that people should donate blood and were also themselves willing to donate blood. This high percentage of willing potential donors is a sign in favor of voluntary blood donation. However, in spite of having a general positive attitude toward blood donation, 62% of students felt that blood donation may lead to infections. While this could reflect ignorance on the part of participants, it also raises a concern regarding the negative perception of the quality of blood bank services and donor safety in the minds of the students.

The prevalence of blood donors in this study was 22.9%, out of which 70.3% were male and only 29.7% were female. Similar findings have been reported in studies by Kumari and Raina (13.81%) and Desai and Satapara (21.3%). Our study is yet another in the series of studies that have reported a low prevalence of blood donation (22.9%) in spite of good overall knowledge (74.4%) and favorable attitude. When this issue was discussed with the study participants in an interactive session, the general response was that although they were willing to donate blood, they were not eligible because of a minimum hemoglobin requirement of 12.5 g% or because of being underweight (<45 kg). While strict donor selection criteria are essential for ensuring donor safety, the issue of numerous students reporting anemia and low body weight are causes for concern. This study suggests the need to seriously consider nutritional deficiencies among medical students, the need for iron and folic acid prophylaxis, deworming, and the provision of nutritious, fresh food in college canteens and hostel mess.

Conclusions

This study suggests that the study population has relatively good knowledge and a favorable attitude about voluntary blood donation. However, the prevalence of blood donation among the students is still low, especially among the girls. This reflects a need for ongoing, educational, and motivational activities for encouraging voluntary blood donation by the students. Since many students reported being underweight and anemic as reasons for not donating blood, these nutritional factors also need to be looked into. Regular health checkups along with provision of nutritious meals in college canteens and hostel mess, etc., should be ensured for the students.

Financial support and sponsorship

This study was financially supported by ICMR STS 2015.

Conflicts of interest

There are no conflicts of interest.

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