Knowledge about Blood Donation among Undergraduate Students of GMC, Patiala, Punjab, India

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Abstract
Background: Students consist a large and healthy group who can meet the demand of safe blood. Knowledge studies have been used to understand the various factors that influence blood donation which is the basis for donor mobilization and retention strategies. However, there is paucity of studies on knowledge about blood donation among medical students.

Aim: To assess the level of awareness and knowledge regarding blood donation among the medical students for a safe and effective blood donor recruitment and retention programme.

Material and Methods: A cross sectional study was conducted among 341 medical students from Govt. Medical College, Patiala, Punjab, India using a predesigned questionnaire. A scoring mechanism was used to understand knowledge level. Data was analyzed in the form of percentage.

Results: The overall knowledge on blood donation was average. Majority (88.9%) of students never donated blood. Knowledge level was found higher among old final students (70.3%) and less among 2nd year medical students (48.7%). Most of the students (89.8%) were aware about the suitable age group for blood donation and 72.5% stated that the minimum gap between donations should be 3 months. However only (25.5%) knew about ideal weight required to donate blood. Only (60.4%) were aware of common deferral conditions for blood donation.

Conclusion: The present study suggests that practice of blood donation can be enhanced by improving knowledge on blood donation among college students. The present study recommends that even medical student community needs to be educated about voluntary blood donation on regular basis as this will strengthen the recruitment and retention of blood donors to donate blood. There is this large pool of safe blood in college going students who are willing, but not tapped as source of blood donation.

Keywords: Knowledge, Medical students, Voluntary Blood donation.

INTRODUCTION
Blood can save millions of lives but many patients requiring transfusion do not have timely access to safe blood. A permanent shortage of blood is observed in blood services all over the world.[1,11] The only source of blood is by blood
donation.\[2\] Selection of donors is an important mean to improve the overall safety of blood supply.\[3\] It has been found that the voluntary, non-remunerated blood donation is the safest form of blood donation.\[4\] However, the recruitment of voluntary, non-remunerated blood donors posed major challenges to transfusion services throughout the whole world.\[5,7\] As per World Health Organization (WHO) norms, 1% of population is generally the minimum needed to meet the country’s most basic requirements for blood.\[6\]

Every year increase in population along with increase in life expectancy rate and associated increase in accidents and surgeries requiring blood, the rate of blood usage is on the rise. Internationally, voluntary blood donation is considered as backbone of blood safety and safe transfusion practices. There is a serious need to improve the recruitment and retention of voluntary donor population to ensure a sustainable and safe blood transfusion practice. According to WHO, an estimated 38% of reported VBDs are contributed by people under the age of 25 yrs. WHO also insist countries to focus on young people to achieve 100% regular, voluntary, non-remunerated blood donation by the year 2020.\[8\]

Even when they are too young to donate, they can be educated to become voluntary donors when they reach the legally accepted age group.\[9\] All countries in South East Asian Region are trying to eliminate culture of replacement donation and moving towards 100% voluntary blood donation.\[10\]

According to World Health Organization (WHO), young people should be the special target group because they form a great part of the population and are generally full of zeal and enthusiasm. Young students are healthy, active, dynamic, receptive and constitute a greater proportion in the Indian population. Lack of information and knowledge is the principal factor discouraging non-donors from donating blood.\[11\] Thus, young students need to be educated, inspired and motivated to donate blood voluntarily on regular basis.

MATERIAL AND METHODS
This study was conducted among 2nd and final year medical undergraduate students in Government Medical College, Patiala, Punjab, India. Three hundred and forty one students (190 students of final year and 151 of 2nd year) participated in this study. A briefing was given to the participants about the aim of this study and assured confidentiality in the collection of personal data. A well-structured and pretested questionnaire on knowledge and practice on blood donation was assessed among students. A scoring mechanism was used to understand knowledge level and practice on blood donation; each correct answer was given one score and results were expressed in percentage. Data collected was analyzed using SPSS version 21.

RESULTS
In the present study, overall knowledge (Table 1) on blood donation among respondents was 59.5%. Overall final year students showed significantly higher knowledge (70.3%), compared to 2nd year students (48.7%). Most of the students (n=300) knew suitable age group (18-65 yrs) for blood donation but surprisingly many (74.5%) were not aware of minimum weight requirement for blood donation.

In our study, 51.3% of students knew about common temporary deferral conditions in women and nearly 60% were aware of permanent deferral conditions. None of the participant was able to respond to the questionnaire with 100% accuracy. There was statistically significant correlation between level of knowledge and practice of blood donation (Table 1).
Table 1: Knowledge and practice on blood donation

| Knowledge (No of Students=341) | Final year(%) | 2nd year(%) | Average(%) |
|-------------------------------|--------------|------------|------------|
| Suitable age for blood donation | 93.6         | 86.0       | 89.8       |
| Minimum weight for blood donation | 35.7         | 15.2       | 25.5       |
| Minimum haemoglobin to donate blood | 89.4         | 55.6       | 72.5       |
| No of times a healthy male and female can donate blood in a year | 82.1         | 58.9       | 70.5       |
| Separation of components from whole blood | 74.6         | 52.8       | 63.7       |
| Number of lives saved from each unit of donated blood | 56.6         | 28.4       | 42.5       |
| Temporary deferral conditions in females | 53.6         | 49.0       | 51.3       |
| Permanent deferral conditions like hepatitis B, hepatitis C, epilepsy | 76.8         | 44.0       | 60.4       |
| Practice | 15.7         | 6.6        | 11.1       |

DISCUSSION

Even after combined efforts from the Government and International Agencies such as Red Cross Society and World Health Organization, the supply of safe blood is still in short of global demand. This study was conducted in order to obtain information about knowledge among students of medical college regarding blood donation and deferral conditions. A total of 341 students responded to the questionnaire. All the respondents were eligible for blood donation as they were in the acceptable age group. All the participants were questioned to assess their knowledge about various aspects of blood donation and blood transfusion.

Knowledge on blood donation among students was measured using the following questions, the general requirements to become an eligible donor, right age and ideal weight for blood donation, how many times a year a healthy male and female can donate blood, components of donated blood, the maximum number of lives saved from one unit of donated blood and also common conditions of temporary and permanent deferral.

In the present study, overall knowledge (Table 1) on blood donation among respondents was 59.5%. Final year students showed significantly higher knowledge (70.3%), compared to 2nd year students (48.7%). Most of the students (89.8) knew suitable age group (18-65 yrs) for blood donation but surprisingly, many were (74.5%) not aware of minimum weight requirement for blood donation. In contrast, a study conducted in Saudi Arabia on 500 students revealed that only 0.06% were aware of suitable age for blood donation, while 28% knew about the necessary weight. Similarly, majority 92% of the students were aware of suitable age for blood donation in a study done by Giri and Phalke. Approximately 72% of the respondents had knowledge about minimum haemoglobin levels required for blood donation. In our study, 70.5% students had the correct knowledge regarding minimum interval of blood donation which was somewhat similar with the study of Agarvat Amit et al (80%). In a similar study, Chopra et al and Aslami et al found that their subjects who had correct knowledge about minimum interval of blood donation was 48.9% and 45% respectively. In the present study, it was found that only 42.5% of the students were aware about the number of patients that can be benefitted from one unit of whole blood. This was in contrast to the studies done by Devi et al (63.9%) and Aslami et al (64%). Manikandan et al found in his study that only 22% of the students were aware about the number of patients that can be benefitted from one unit of blood. This result strongly recommends that frequent awareness should be given to the students on blood components i.e, separation of one unit of blood can save up to 4 lives.
The study showed that most of participants (88.9%) had never donated blood so far, which is almost comparable with studies among health professional students by Manikandan et al\textsuperscript{[15]} (89.25%), Sunetra Sarma et al\textsuperscript{[24]} (92%), and Desai et al\textsuperscript{[16]} (78.7%). But it was different among students in studies conducted by Kowsalya et al\textsuperscript{[26]} (62.6%), Giri et al\textsuperscript{[14]} (52.5%), and Nwogen et al\textsuperscript{[27]} (22%). Because of background of knowledge, medical students generally have positive attitude towards voluntary blood donation and they may be easily motivated towards blood donation.

In our study, knowledge regarding blood donation was higher in final year students and higher number of blood donors in final year indicate there is positive association among knowledge and practice on blood donation which suggests that positive attitude and practice can be improved by inculcating knowledge on blood donation among medical students. This will help to achieve target of 100% voluntary blood donation. This study suggests that lessons about blood donation should be incorporated in the initial stages of higher education and periodic awareness program should be there for recruitment and retention of donors. This is in contrast to reports by Anwer et al\textsuperscript{[23]} and Hosain et al\textsuperscript{[22]}, in which they discussed that greater knowledge does not lead to blood donation.

Bani and Giussani\textsuperscript{[28]} reported that higher rate of deferrals in women are responsible for low proportion of female donors. The present study strongly suggests that deferrals should be counseled that most of these deferrals are temporary and can become healthy donors in the subsequent blood donations.

Thus analyzing all the observations from the study, it is evident that knowledge about blood donation is average among medical students and knowledge has positive association with practice of blood donation. Our study validates the need for regular awareness programmes and introduction of course about safe blood practices and voluntary donation at early stage in medical colleges. Medical students know the importance and need of deferrals so they can self exclude themselves in situations when they are not fit to donate. This will ensure safe donor selection, as directed donors may hide their occult illness history\textsuperscript{[29,30]} and hence compromising the safety of blood. In addition, medical students can be a source of guidance to their friends, family and general public and can motivate them about voluntary blood donation.

CONCLUSION

Awareness sessions on voluntary blood donation should be held regularly among college students to improve practice of blood donation and to remove misconceptions about voluntary blood donation.

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