

Research article

Knowledge, attitudes and practices among medical students on blood donationNiranjan P. Khadilkar¹, Mamatha B.V.², Bhagyajyothi M. Bhat², Preeval Shreya Crasta³Department of ¹Pathology, ²Biochemistry, ³Community Medicine, Kanachur Institute of Medical Sciences, Natekal, University Road, Mangaluru, 575 018, Karnataka, India

(Received: September 2022 Revised: October 2022 Accepted: November 2022)

Corresponding author: **Bhagyajyothi M. Bhat**. Email: dr.bhagyajyothi@kanachur.edu.in**ABSTRACT**

Introduction and Aim: Blood is a lifesaving component on many occasions. Despite increasing awareness of the importance of blood, there is a wide gap between the demand and supply of blood and its various components. The aim was to determine the knowledge, attitudes and practices on blood donation among the students of a medical college in Mangalore, Dakshina Kannada.

Materials and Methods: The present descriptive observational study was based on the students' response to the pre-validated questionnaire which had questions regarding the knowledge, attitudes and practices of blood donation. The students studying in different classes of MBBS had been included in the study. The data was analysed using the statistical software SPSS version 28. Qualitative variables were presented as frequency and percentage and quantitative variables as mean± SD. Chi square test was used to find the association of knowledge and attitudes among the gender, p value <0.05 was considered statistically significant.

Results: The MBBS students had an overall good knowledge and favourable attitudes about blood donation. However, many failed to answer some questions regarding the advantage of blood donation and the number of patients who benefited from one unit of blood. We observed a poor practice of blood donation among the MBBS students. This was attributed to lack of opportunity.

Conclusion: The study emphasizes the need for awareness programs and advertisements regarding voluntary blood donation.

Keywords: Knowledge; attitudes; practices; donation; voluntary.

INTRODUCTION

Blood is a vital component in saving the life of human in many circumstances. Whole blood can save the lives of recipients as it can be separated into its various components and used depending on the need of the recipient. In countries like India there exists a large gap between the need and the availability of blood (1). One of the reported studies says that this gap between the demand and supply in India can be explained as 2.5 donations per 1000 eligible people (2). Three types of blood donors are identified, voluntary blood donors, replacement donors and paid professional donors (3). Most of the blood donations in India are done on replacement basis, where the needy person's family or friends try to make a replacement, many a times this ends up in approaching a paid professional donor for replacement. However, paid blood donation has been banned in India since 1994 (4).

MBBS students can serve as a readily available source of blood in medical college hospitals. However, many students hesitate to donate blood possibly due to lack of awareness about the need to donate blood or due to some other constraints. If we know the reason for not donating the blood, we may be able to educate them

and encourage them to carry out this act of goodwill. In this regard, many studies in various states of our country on the knowledge, attitude and practice of blood donation among the medical students are available (4-6). Following a detailed review of the available literature regarding this topic, we aimed at studying the knowledge, attitudes and practices of blood donation among MBBS students at our own medical college in Mangalore, Dakshina Kannada.

MATERIALS AND METHODS

This Institution based cross sectional study included MBBS (1st to 4th year) students studying in a Medical College in Mangalore, Dakshina Kannada, Karnataka, India. The sample size was calculated based on the formula, $N = Z^2 \cdot pq / d^2$, where $Z_{\alpha} = 1.96$ for 95% confidence interval, $P = 75.2\%$ had knowledge on health benefits of blood donation (5), $q = 1 - p$, $d = 5\%$ (margin of error). The total sample size was 287. We employed a multistage sampling technique. The research study was carried out after obtaining the ethical clearance (KIMS/IEC/A002/2022) from the Institutional Ethical Committee. All the guidelines set up by the committee were followed carefully throughout the project work.

Protocol

The MBBS (1st to 4th year) students were divided into 4 strata and the participants were selected based on the roll numbers. Every second student was selected till the required number of 72 participants was obtained from all the strata. Informed consent was taken from the participants. They were provided with a predesigned and validated questionnaire and asked to respond to the same. The questionnaire had two parts. Part one had Socio demographic details whereas part two had questions on the knowledge, attitudes and practices of blood donation.

Statistical analysis

Data was entered in Microsoft Excel, analysed using the statistical software SPSS version 28. Qualitative variables were presented as frequency and percentage and quantitative variables as mean± SD. Chi square test was used to find the association of knowledge and attitudes among the gender, p value <0.05 was considered statistically significant.

RESULTS

The study population included 287 MBBS students, among them 118 were males and 169 female participants. The mean age of the participants was 20.7 years and mean body weight was 59.6 kgs.

Assessment of knowledge

In Table 1, the students’ response to the questions related to the knowledge of blood donation is shown. The students had a good knowledge with an average score of 5.9 out of 9 points for all correct answers. Majority of the students answered correctly for the questions related to minimum age, minimum haemoglobin (Hb), minimum time interval between the donations, universal donor, and universal recipient group. About 50% of the participants answered right for the questions related to the minimum body weight and volume of blood collected. The students did not have good knowledge about the advantages of blood donation (20% correct answers) and a number of patients benefited from one unit of blood (30% correct answers).

Assessment of attitudes

The students’ responses for the questions related to attitudes towards blood donation are depicted in Fig.1. The students showed an overall favourable attitude. The average score was 3.6 for a total of 4 questions. 99% of the participants agreed that blood donation is a good practice. About 87% of the students said that they are ready to donate blood if found necessary. Majority did not expect payment against donation (81.2%).

Table 1: Responses for the questions to assess the knowledge

Sl No.	Questions	Correct answer (%)	Wrong answer (%)
1	The minimum age required for blood donation	278 (96.9)	9 (3.1)
2	The minimum Hb needed for blood donation in women	204 (71.1)	83 (28.9)
3	The minimum weight needed for blood donation in men	157 (54.7)	130 (45.3)
4	Minimum time interval between two blood donations	197 (68.6)	90 (31.4)
5	Advantage of the blood donation among the options	71 (24.7)	216 (75.3)
6	Volume of blood that is usually collected at each donation	134 (46.7)	153 (53.3)
7	Number of patients that can be benefited from one unit of blood	86 (30.0)	201 (70)
8	The universal donor blood group	283 (98.6)	4 (1.4)
9	The universal recipient blood group	282 (98.3)	5 (1.7)

n=287

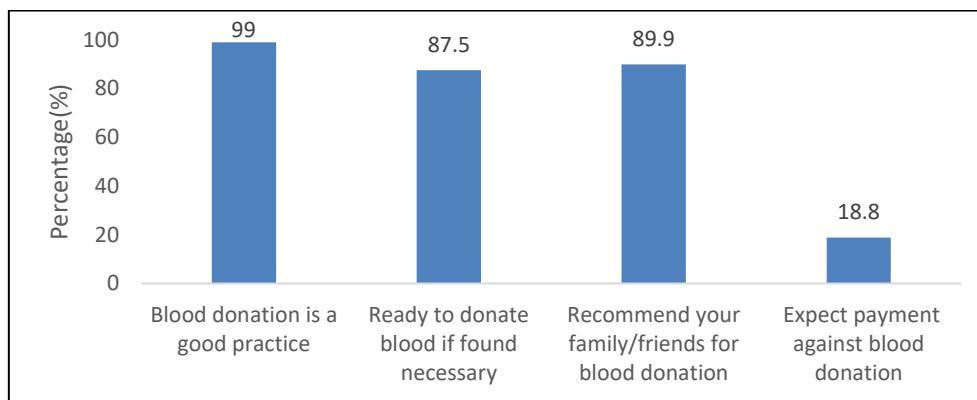


Fig.1: Responses for the questions to assess the attitude

Comparison of knowledge and attitudes among males and females

In Table 2, the comparison of knowledge and attitudes among the male and female students is given. There was no statistical significance in both the level of knowledge and attitudes among the male and female students, however, the girls showed better attitude towards blood donation.

Table 2: Comparison of knowledge and attitude among males and females

	Gender		Test statistics	p value
	Male	Female		
Knowledge	5.78±1.18	5.98±1.13	-1.43	0.156
Attitude	3.48±0.78	3.64±0.73	-1.73	0.084

Statistical test: Independent sample t- test. p value < 0.05 is statistically significant.

Reasons for not donating blood

33(11.5%) students out of 287 have donated blood at least once, and only 10 (3.5%) are regular donors. About 50% of the students said they lack the opportunity to donate. Majority of the students said that they do not have the fear of infection, fear of needle prick or fear of becoming weak. Majority of the participants said that they are eligible for blood donation (Fig. 2).

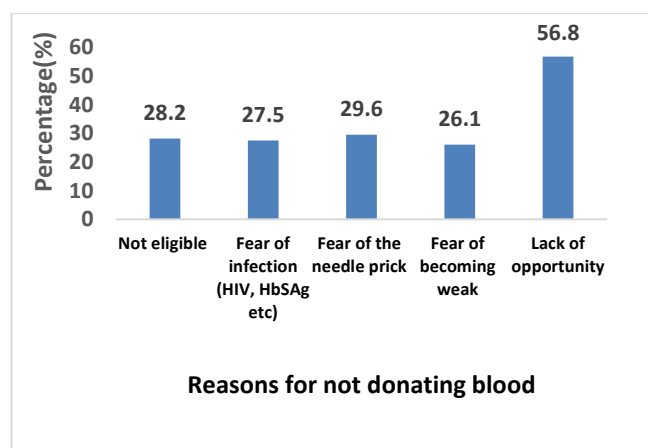


Fig. 2: Reasons for not donating blood

DISCUSSION

The present study was conducted to assess the MBBS students' knowledge, attitudes and practices on blood donation. We observed good knowledge among the medical students regarding blood donation. The present observation is in accordance with earlier study by Nandan *et al.*, (5) and Kumari *et al.*, (7). Less than half of the study population of the present study had a fair knowledge about the volume of the blood collected in one donation. This observation also is similar to the earlier documented works (7, 8), where about one third of the study population knew the volume of the blood collected. Good number of the study participants replied correctly for the minimum age limit for blood donation. In a study by Mirza *et al.*, 37.3% of the MBBS students answered correctly for the age limit of the donors (9). In the present study, more than half of the medical students answered correctly for the question on minimum Hb needed for donation and the time interval between two donations. The present observation is in accordance with that of an earlier documented work (7), where more than half of the Jammu students answered correctly. However, in another study by Alsalmi *et al.*, less than half of the Health Sciences students of Saudi Arabia knew the time interval between two donations (10). Only 1/4th of the participants of the current study knew the health benefits of blood donation. The risk of cardiovascular diseases decreases significantly on blood donation (11). However, the loss of iron from the body in the form of Hb may be the concern of many people. The Hb drop at each donation may be 8-9% and it gets replenished to the pre-donation value at an average of about 35 days (12). Many students in the present study did not know the number of patients that can benefit from one unit of blood. The present finding contrasts with the earlier study outcome, where about 70% of the students answered correctly for this question (13). Majority of the participants knew the universal donor and recipient blood group. A more or less similar observation was available in

literature, where the universal recipient was known by majority of the Higher education Institution participants, however, very few of them were aware of the universal donor group (14).

The present study outcome depicted a favourable attitude of the students towards blood donation. They agreed that blood donation is a good practice. In a study on the students of different colleges of Nepal, 82.5% of the participants agreed that blood donation is a noble act (15). Berhe *et al.*, observed a favourable attitude by the statement that blood donation is a social responsibility (16). The participants in the current study said that they are ready to donate blood if found necessary. The present observation is supported by one of the earlier documented works; where about 91% of the participants agreed that blood donation is a good practice and were willing to donate blood (4). In a letter to the Editor, it was said that the religious heads, friends and spouses influenced the donors towards blood donation (17). It was also told that they are ready for donation upon being informed by any source like advertisement, phone call or appeal from blood bank (17). Majority of the participants of the current study said that they will encourage their relatives for blood donation. This finding is partially in agreement with an earlier study by Al-Asadi *et al.*, where, majority of the participants were ready to donate blood whenever there is a need, however, only few said that they can encourage their relatives to take part in this wise act (18).

Despite having a considerably good knowledge and willingness to donate blood, the practices were not appreciable in the present study. About 11.5% of the students donated blood at least once and only 3.5% of the participants were regular blood donors. This indicates poor practice. In this regard, only 21.6% of the health care givers donated blood at least once and among them only 2.8% were regular donors in an Ethiopian study (19). A slightly better number (24%) of the medical students of Rajkot donated blood at least once, as per the study observation by Amit *et al.*, (20). In a study by Melku *et al.*, many of the participants replied that they had the fear of pain and felt that they were medically unfit for donation (19). In another South Indian study, about half of the Health Sciences students felt that they were unfit and about 1/4th of the participants never thought of donating blood (21). Lack of opportunity was the reason given by most of the participants in the current study as well as many earlier documented works (7,18,20). In earlier studies, lack of fitness was the common reason given for not donating blood (4,22). In the current study, about 28.2% of the students felt that they are not eligible with respect to fitness. Poor practice in spite of having a favourable attitude was also the study outcome by Hossain *et al.*, where lack of knowledge, lack of opportunity, fear of ill health following donation were among the different reasons

given (23). Fear of becoming weak, the fear of needle prick and sight of blood were the reasons for not donating blood by the Medical students from Himachal Pradesh (24).

Poor practices despite having a good knowledge and favourable attitudes observed by the present and earlier studies emphasise on the awareness programs, motivational talks in this matter. The new medical education system stresses upon having practical knowledge, which may be accomplished by implementing educational programs on blood donation. Blood donation camps may be conducted at the institutional levels on a regular basis and the students may be encouraged to participate actively. The students may also be given appropriate guidance to approach the institutional blood bank and register their names for blood donation so that they can be approached whenever needed. This is in consonance with the recent notification issued by the department of health and family welfare, Government of India which has proposed to encourage regular voluntary blood donation camps.

CONCLUSION

Poor blood donation practices despite having the basic knowledge and positive attitude accentuates the need of educational programs to motivate the students. They need to be guided to donate blood on a regular basis.

ACKNOWLEDGMENT

We are thankful to Dr. Sridevi H.B., Additional Professor, Kasturba Medical College, Mangalore for validation of the questionnaire. Thanks to all the participants for the willingness to take part in the study.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

1. India Today. Why India facing a huge blood crisis. Available online at: <https://www.indiatoday.in/mail-today/story/why-india-is-facing-a-hugeblood-crisis-1619927-2019-11-18> (accessed July 22, 2022).
2. Mammen, J.J., Asirvatham, E.S., Lakshmanan, J., Sarman, C.J., Pandey, A., Ranian, V., *et al.*, The clinical demand and supply of blood in India: A National level estimation study. *PLoS ONE* 2022; 17 (4): e0265951.
3. Aggarwal, S., Sharma, V. Attitudes and problems related to blood donation in India. A short communication. *Ann Trop Med Public Health*. 2012;5 :50-52.
4. Chauhan, R., Kumar, R., Thakur, S. A Study to assess the knowledge, attitude, and practices about blood donation among medical students at a medical college in North India. *J Family Med Prim Care*. 2018; 7:693-697.
5. Nandan, S., Veena, S., Devadas, V.M. Knowledge, Attitude and Practice of blood donation among undergraduate medical students in Shimoga Institute of Medical Sciences.

- International Journal of Health and Clinical Research. 2021;4(6):182-185.
6. Uma, S., Arun, R., Arumugam, P. The knowledge, attitude and practice towards blood donation among voluntary blood donors in Chennai, India. *Journal of Clinical and Diagnostic Research*. 2013;7(6): 1043-1046.
 7. Kumari, S., Raina, T.R. Knowledge, attitude and practices (KAP) regarding voluntary non-remunerated blood donation (VNRBD) among the students at colleges of Jammu, India. *Int J Community Med Public Health*. 2015;2(1):45-50.
 8. Rizwan, F.A., Al-Amri, R.O., Al-Harathi, A.A., Al-Otaibi, N.A., Al-Otaibi, R.F. Knowledge, attitude, and blood donation practices among medical students of Taif University, Saudi Arabia. *Saudi J Health Sci* 2022;11: 68-73.
 9. Mirza, H., Khan, F., Naeem, F.J., Ashraf, B. Blood safety and donation knowledge, attitude and practice (KAP) among 1st year medical students at LMDC, Lahore. *Pakistan Journal of Medical and Health Sciences*. 2005; 9: 992-994.
 10. Alsalmi, M.A., Hani, M., Almalki, H.A., Alghamdi, A.A., Aljasir, B.A. Knowledge, attitude and practice of blood donation among health professions students in Saudi Arabia; A cross-sectional study. *Journal of Family Medicine and Primary Care*. 2019; 8(7):2322-2327.
 11. van den Hurk, K., Zalpuri, S., Prinsze, F.J., Merz E-M, de Kort, W.L.A.M. Associations of health status with subsequent blood donor behavior- An alternative perspective on the Healthy Donor Effect from Donor InSight. *PLoS ONE*. 2017; 12(10): e0186662.
 12. Pottgiesser, T., Specker, W., Umhau, M., Dickhuth, H.H., Roecker, K., Schumacher, Y.O. Recovery of hemoglobin mass after blood donation. *Transfusion*. 2008; 48(7):1390-1307.
 13. Aslami, A.N., Jobby, A., Simon, S., Nazarudeen, N., Raj, P., Ramees, M., *et al.*, Assessment of knowledge, attitude, and practice (KAP) of blood donation among MBBS Students of a Medical College in Kollam, Kerala. *Journal of Evolution of Medical and Dental Sciences*. 2015; 4(35):6086-6095.
 14. Chandak, A., Yeravdekar, R., Shukla, S. Perception and practices of voluntary blood donation amongst students of higher educational institutes in India. *Online Journal of Health and Allied Sciences*. 2019;18(3):6- 11.
 15. Amatya, M. Study on knowledge, attitude and practice of blood donation among students of different colleges of Kathmandu, Nepal. *International Journal of Pharmaceutical & Biological Archives*. 2013; 4(3): 424-428.
 16. Berhe, Y.F., Dagnew, Z.A., Kidane, S.K., Tesfagergish, E.B., Berhane, L.O., Arefaine, M.G., *et al.*, Knowledge and attitude on blood donation among degree students of Eritrea Institute of Technology: A cross-sectional study. *International Journal of Nursing and Healthcare Research*. 2020;4(2):57-70.
 17. Siromani, U., Thasian, T., Sevaraj, K.G., Daniel, D., Mammen, J.J., Nair, S.C., *et al.*, Determinants which influence to donate blood voluntarily at a Northeast District of the State of Tamil Nadu, South India. *Indian Journal of Community Medicine*. 2014; 39(4):250.
 18. Al-Asadi, J.N., Al-Yassen, A.Q. Knowledge, attitude and practice of blood donation among university students in Basrah, Iraq: A comparison between medical and non-medical students. *Asian Journal of Medical Sciences*. 2018; 9(6):62-67.
 19. Melku, M., Asrie, F., Shiferaw, E., Woldu, B., Yihunew, Y., Asmelash, D., *et al.*, Knowledge, attitude, and practice regarding blood donation among Graduating Undergraduate Health Science Students at the University of Gondar, Northwest Ethiopia. *Ethiop J Health Sci*. 2018; 28(5):571-582.
 20. Amit, H.A., Amit, A.G, Gauravi, A.D., Kakadia, M. Knowledge, attitude, and practice of voluntary blood donation among medical students of PDU Medical College Rajkot. *International Journal of Current Research*. 2014; 6(5):6839-6841.
 21. Sabu, K.M., Ramya, A., Binu, V.S., Vivek, R. Knowledge, attitude and practice on blood donation among Health Science Students in a University campus, South India. *Online Journal of Health and Allied Sciences*. 2011; 10(2):1-3.
 22. Javeed, A., Kousar, R., Farooq, A., Hina, S., Ghauri, S.K., Tabbasum, T. Knowledge, attitude, and practice of blood donation among Undergraduate Medical Students in Azad Kashmir. *Cureus*. 2020; 12(4): e7733.
 23. Hossain, M.S., Siam, M.H.B., Hasan, N., Jahan, R., Siddiquee, M.H. Knowledge, attitude, and practice towards blood donation among residential students and teachers of religious institutions in Bangladesh – A cross-sectional study. *Heliyon*. 2022;8: e10792.
 24. Meinia, S.K., Kumar, Y., Meinia, A., Singh, G. A study to assess the knowledge, attitude, and practices about voluntary blood donation amongst the undergraduate medical students in Solan, North India. *Int J Med Sci Public Health* 2016;5(12):2550-2554.