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Original Research Article

Barriers of blood donation practices during the pandemic- KAP study on voluntary blood donation during the COVID-19 pandemic among undergraduate students in Karnataka

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ABSTRACT

Background: During COVID-19 outbreak there was a drastic reduction in voluntary blood donation and cancellation of blood camps. Students and youth constitute a huge pool of voluntary blood donors and can also educate others in the community. Aim was to assess voluntary blood donation practices and its barriers during the COVID-19 pandemic among undergraduate students in Karnataka and assess knowledge and attitude towards blood donation.
Methods: This was a retrospective record analysis of a 2021 online survey data collected as part of a student's educational research exercise. Records of knowledge, attitudes, and practices of blood donation among undergraduate students were retrieved and analyzed.
Results: Of the records of 232 undergraduate students, 64.2% (149) and 62.1% (144) were medical students and females. None of the participants had complete knowledge and there was significant difference in the knowledge of medical and non-medical students regarding blood donation. Satisfactory attitude towards blood donating procedure was seen among 64.2% students. Blood donation had been done by 19% and 4.7% of participants before and during the pandemic, respectively with majority being males and slightly more by non-medical students. Willingness to donate blood in the future was seen among 94.4%.
Conclusions: The results suggest the need for awareness campaigns to address misconceptions and improve knowledge and attitude towards blood donation; also, to increase the number of voluntary blood donations as there was a high willingness to donate blood in the future. This could also be translated to other epidemics or pandemics that may arise in the future.

Keywords: Blood donation practices, COVID-19, Karnataka, Undergraduate students

INTRODUCTION

Blood donation is a necessity in health care. Human blood donation is the only way of acquiring blood to meet emergency requirements in cases of road traffic accidents, perinatal complications, anemic disorders and surgical emergencies. Despite the rapid breakthroughs in medical science today, there is still no ideal substitute.[1] It is important to ensure the quality of blood transfusion to save lives and prevent the spread of infectious diseases. Hence, there is a need for well-coordinated blood transfusion service, proper screening tests for transmittable diseases and collection of blood from voluntary and non-remunerable blood donors.[2] The numbers of potential donors are reduced due to the strict selection criteria which are imposed to ensure quality of blood supplies. There is a need to organize frequent blood drives to maintain blood supply and to adopt an approach for enhancing new blood donor recruitment and retention of old donors.[3]

SARS-CoV-2 (also known as COVID-19) pandemic had a negative impact on health care services throughout the world.[4] It has had a negative effect on blood collection worldwide forcing blood banks, blood centers, and the governments to adopt new policies distinctly in patient blood management and blood bank operations to adapt to a decreased blood supply as well as to protect our donors from COVID-19.[5] During COVID-19 outbreak there was a drastic reduction in the total number of voluntary blood donors, cancellation of blood camps, decreased number of blood components and increased discard rate of blood components. Diminished donor inflow and lack of uniform donor selection criteria during the initial period, fear of COVID-19 spread to blood donors and staff personnel, shortage of available blood units, handling of medical records, and concerns about transfusion-transmitted COVID-19 were the major challenges faced in blood centers.[6]

The demand for blood and its components is more than its supply and the availability of blood from voluntary, non-remunerated donors has been considered as the safest source of blood. WHO estimated that around 38% of reported voluntary donors belong to the age group of less than 25 years. As young students are healthy and active, they must be motivated to donate blood voluntarily and without receiving any remuneration.[2] As the youth can also communicate with the public regarding the importance of blood donation, proper education should be given to them regarding the same.

Medical college students can serve as a readily available pool of voluntary blood donors for the attached medical college hospitals and help tidy away some scarcity of blood and blood products. However, apart from them, a significant number of other students could also develop such generous habits. High awareness among students has not translated into better practices as they do not find enough opportunities to donate blood. The prevalence of voluntary blood donation is reported to be even lower among the females.[2,7-9] According to a study, the awareness of medical students on blood donation is 82.2% which is significantly higher as compared to students from other backgrounds that show an awareness of 35.5%. It has also been observed that 86% of medical students and only 23.4% of non-medical students have donated blood.[9] Willing students can be a safe pool of blood donors, but this has not been tapped enough by our blood donation drives. Certain misconceptions can also hamper blood donation practices.[2] Hence, there is a need to explore the different factors that can contribute toward voluntary blood donation and there is a need for motivation, effective donor education and recruitment strategies.

Therefore, this study was done to assess voluntary blood donation practices and its barriers during the COVID-19 pandemic among UG students in Karnataka and to assess the knowledge and attitude towards blood donation.

Aims

To assess voluntary blood donation practices and its barriers during the COVID-19 pandemic among undergraduate students in Karnataka. To assess the knowledge and attitude towards blood donation among undergraduate students of Karnataka.

METHODS

An online survey was done as a part of IDCBTP (integrated discipline community-based training program) as an educational research exercise to understand the various steps in research including research protocol and informed consent formation, preparation and pre-testing of a questionnaire, data collection, preliminary analysis etc. and to understand the importance of research in medicine.

The survey was done by MBBS students at a medical college in Bengaluru, Karnataka in July 2021 conducted among 232 undergraduate students in Karnataka. The protocol and enclosures that were prepared as a part of the said program (i.e. informed consent and questionnaire) and the data collected during this exercise with its preliminary analysis was presented to and reviewed by the principal and dean of the institution and all the faculty in the department of community medicine.

In this study, these records, i.e., the primary data was retrieved and analyzed.

Settings and design

This study was a retrospective study (record analysis). Records of an online survey conducted among 232 students in the age group 18- 24 years (who had turned 18 as of March 2020) pursuing their undergraduate degree in Karnataka were analyzed.

Study period

The time that was required for collecting primary data was 1 month (July 2021 - August 2021). The time that was required for collecting and analyzing the secondary data is 1 month (December 2022 - January 2023).

Sample size

From the literature review, in a study by Meinia et al, it has been observed that the voluntary blood donation by students was 43%.[10] In this study, expecting to get similar results during COVID-19 pandemic with a precision of 95% confidence level and 10% relative precision, the study required a minimum of 199 subjects. We received a total of 274 responses and after application of the inclusion criteria (records of an online survey by students in the age group 18-24 years pursuing their undergraduate degree in Karnataka). We had a total of 232 responses.

Study methodology: In this study, the records collected through an online survey that was done as a part of an educational research exercise, i.e., the primary data was retrieved and analyzed. For primary data collection, a semi-structured e-questionnaire (Google form) was distributed among the study participants. A participant information form was provided and an informed consent for participation was taken. All those who expressed their consent to participate in the study were enrolled in the study. Sociodemographic data and information regarding knowledge, attitude and practices of blood donation was elicited using the same questionnaire.

Data analysis

The secondary data that was retrieved, were entered in, and analyzed using the IBM SPSS Statistics for Windows (version 18).

Consent and ethical issues

The approval of the institutional (ethics) review board was taken (DRP number: DRP/IFP 921/2022 dated September 26th, 2022) (IRB reference number: MSRMC/EC/SP-11/22-2022 dated December 15th, 2022). The online informed consent form was used to obtain consent.

RESULTS

Demographic parameters

A total of 232 undergraduate students participated in the study, of which 64.2% (149) were medical students and the remaining 35.8% (83) were from other streams like engineering, allied health sciences, arts etc. Majority of the respondents were female 62.1% (144).

Knowledge regarding blood donation

None of the participants had complete knowledge regarding voluntary blood donation. There was a significant difference in the knowledge of medical (77.9%) and non-medical (38.6%) students regarding the universal donor blood group (p=0.000). However, there was no difference in knowledge about universal recipients (78.5% and 68.7%, p=0.097). There was a significant difference in the knowledge of medical (66.4%) and non-medical (38.6%) students on the correct volume of blood collected during each donation (p=0.000) (Table 1).

Table 1: Comparison of knowledge on blood donation among medical and non-medical students.

Question		Overall (%)	Medical (%)	Non-medical (%)	P value
Which blood group is considered a universal recipient? Answer: AB positive		174 (75)	117 (78.5)	57 (68.7)	0.097
Which blood group is considered a universal donor? Answer: O negative		148 (63.8)	116 (77.9)	32 (38.6)	0.000
What is the approximate period after COVID vaccination during which you can't donate blood? Answer: 28 days		44 (19)	29 (19.5)	15 (18.1)	0.796
Can blood donation be done by people who are:	Anemic. Answer: No	213 (91.8)	144 (96.6)	69 (83.1)	0.000
	Diabetic. Answer: Yes	73 (31.5)	51 (34.2)	22 (26.5)	0.225
	Underweight (<50 kg). Answer: No	197 (84.9)	128 (85.9)	69 (83.1)	0.572
	Aged >65 years. Answer: No	180 (77.6)	122 (81.9)	58 (69.9)	0.036
	Pregnant Answer: No	205 (88.4)	135 (90.6)	70 (84.3)	0.154
	Recently gotten tattooed. Answer: No	191 (82.3)	125 (83.9)	66 (79.5)	0.402
	Intravenous substance abusers Answer: No	226 (97.4)	146 (98)	80 (96.4)	0.461
What volume of blood is collected during each donation? Answer: 350-450 ml		131 (56.5)	99 (66.4)	32 (38.6)	0.000
Is donated blood screened for:	HIV. Answer: Yes	219 (94.4)	145 (97.3)	74 (89.2)	0.010
	Syphilis. Answer: Yes	196 (84.5)	133 (89.3)	63 (75.9)	0.007
	Malaria. Answer: Yes	131 (56.5)	93 (62.4)	38 (45.8)	0.014
	Hepatitis. Answer: Yes	201 (86.6)	138 (92.6)	63 (75.9)	0.000
	Diabetes. Answer: No	126 (54.3)	90 (60.4)	36 (43.4)	0.013

Only 44 (19%) participants were aware of the period after COVID vaccination during which blood donation is not permitted and there was no difference between medical and non-medical participants (p=0.796). Medical and non-medical students also had significant differences in knowledge of whether anemia (p=0.000), age over 65 years (p=0.036), and diabetes (p=0.013) were eligible criteria for blood donation. Most respondents were aware that donated blood is screened for HIV (94.4%), hepatitis (86.6%), syphilis (84.5%), and malaria (56.5%). There was a significant difference in knowledge regarding

screening for HIV (p=0.010), syphilis (p=0.007), malaria (p=0.014), hepatitis (p=0.000) and diabetes (p=0.013).

Attitude and practice regarding blood donation

Most participants (64.2%) had a satisfactory attitude towards the procedure of donating blood in a blood bank/hospital. There was a significant difference in the attitude of medical and non-medical students (p=0.021). Prior to the pandemic 19% of participants had donated blood and only 4.7% had donated during the pandemic. Among the participants, 94.4% were willing to donate blood in the future. More males (34.1%) had donated blood before the pandemic compared to females (9.7%). Similarly, more males (11.4%) had donated blood during the pandemic compared to females (0.7%) with a significant difference (p=0.000). However, there was no significant difference between males and females in terms of their willingness to donate blood in the future (Table 2).

Table 2: Comparison of attitude and practice regarding blood donation among medical and non-medical students.

Questions on attitude		Overall (%)	Medical (%)	Non-medical (%)	P value
What do you feel about the procedure of donating blood in a blood bank/hospital?	Response: Satisfactory	149 (64.2)	102 (68.4)	47 (56.6)	0.021
	Response: Unsatisfactory	13 (5.6)	4 (2.7)	9 (10.8)	
	Response: Not sure	70 (30.2)	43 (28.9)	27 (32.5)	
Where do you generally prefer to donate blood?	Blood bank. Response: Yes	54 (23.3)	40 (26.8)	14 (16.9)	0.008
	Blood camps. Response: Yes	37 (15.9)	16 (10.7)	21 (25.3)	
	Response: Not sure	141 (60.8)	93 (62.4)	48 (57.8)	
Questions on practice					
Have you donated blood before the pandemic? Response: Yes		44 (19.0)	24 (16.1)	20 (24.1)	0.137
Have you donated blood during the pandemic? Response: Yes		11 (4.7)	6 (4.0)	5 (6.0)	0.493
Have you come across any blood donation campaigns during the pandemic? Response: Yes		104 (44.8)	71 (47.7)	33 (39.8)	0.247
Will you be willing to donate blood in the future? Response: Yes		219 (94.4)	142 (95.3)	77 (92.8)	0.422

DISCUSSION

The study was conducted to determine the factors associated with knowledge and practice of blood donation and assess attitude towards voluntary blood donation amongst undergraduate students of Karnataka during COVID-19 pandemic.

Though knowledge may not be subjected to change due to the pandemic, attitude and practice may be heavily influenced by the occurrence of the COVID-19 pandemic.

In our study, 78.5% and 77.9% of medical students were aware of who is considered as a universal recipient and universal donor, respectively. In a study done in Delhi (98%) and Mangalore (98.6%) the medical students had a better knowledge on universal donor and recipient.[8,11]

Most of the medical students had good knowledge on the donor criteria for weight (85.9%) and age (81.9%) with similar findings in other studies.[8,10-12] In studies done in Karachi and Puducherry the knowledge amongst medical students regarding age (66.4%) and weight (54.7%) criteria was lower.[12,13] Most medical students knew if blood donation can be done if the donors are anemic. Similar findings were seen in another study done in North India.[8] This could be due to increased awareness and education on anemia which is very common in India.

In our study only 66.4% of the medical students knew the volume of blood donated during each donation and even lesser non-medical students (38.6%) were aware of this. Other studies report wide differences in knowledge regarding this (83.3-46.7%).[10,11] The lower knowledge regarding this may be due to lack of awareness generation on this by authorities and the lower practice rate making students unaware of the procedure during donation.

Many medical students had adequate knowledge about the diseases that the donated blood is screened for like HIV (97.3%), hepatitis (92.6%) and syphilis (89.3%). Similar findings were seen in another study for HIV and hepatitis but the awareness on syphilis (57%) was lower.[8] Non-medical students had good knowledge on screening for these diseases but relatively less than medical students like another study.[9] Medical and non-medical students have inadequate knowledge on blood donation screening regarding malaria. These can possibly be due to emphasis on certain diseases during awareness campaigns and by their respective national programmes.

Willingness to donate blood in the future was expressed by 219 students (94.4%) out of which 142 were medical students. A similar percentage was seen in other studies done in India.[8-10] Approximately half of the respondents wanted to donate blood altruistically. Similar willingness is seen in other studies in India.[9] Students seem to have a

positive attitude towards blood donation and would do it without any reciprocative benefits (Figure 1).

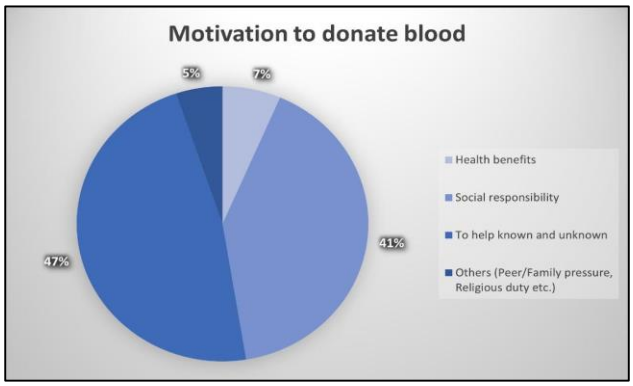

Figure 1: Responses for the question: "What is your motivation (reasons for wanting) to donate blood?".

Among the medical students, only 24 (16,1%) had donated blood before the pandemic and 6 (4.0%) had donated blood during the pandemic. Whereas among the non-medical students, 20 (24.1%) had donated blood before the pandemic and 5 (6.0%) donated blood during the pandemic. Although a much larger proportion of the donors are expected to be medical students due to their affiliation with medical colleges and hospitals, similar to another study.[9]

In our study, 44 (19.1%) students had donated blood before the pandemic and only 8 students donated blood during the pandemic. Most of them were male students and this is in congruence with other studies.[9,11-13] To promote blood donation among healthy males and females, accurate information must be provided thereby increasing the total pool of available blood donors.

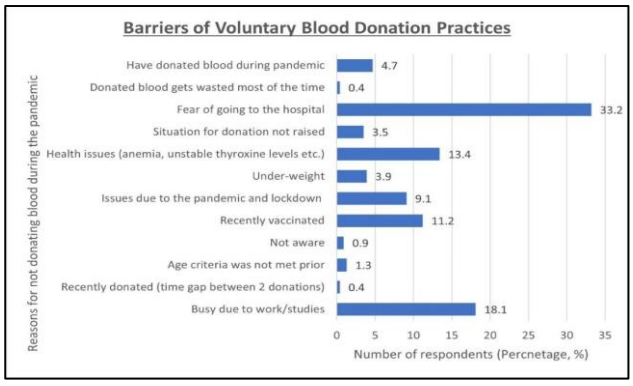

Figure 2: Reasons for not donating blood during the pandemic (232 respondents).

Most respondents (221) didn't donate blood during the pandemic with the major reasons being fear of going to hospital or blood banks (Figure 2). The reason for many of those who had donated blood prior to the pandemic but not during was also the fear of acquiring COVID infection during a donation visit (Figure 3). A similar pattern was seen in another study amongst the non-medical students.[9,14] An increase in education and campaigns is required to promote voluntary blood donation. Safe screening and hygienic practices should be done during blood donation to involve more donors as a major reason for not donating blood is fear of going to hospital or blood banks.

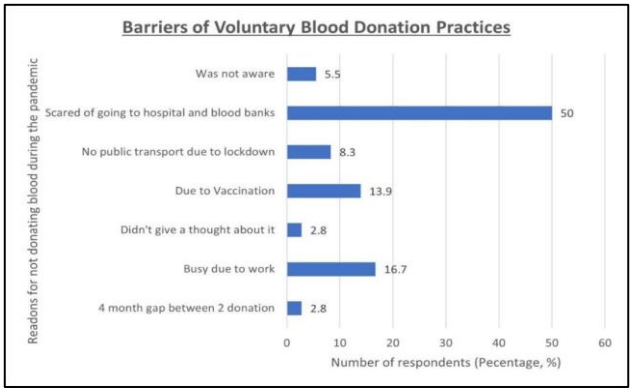

Figure 3: Reasons for not donating blood during the pandemic though blood donation was done prior (36 respondents).

The study has many strengths and can contribute to future research and policymaking as it addresses an important public health issue related to the COVID-19 pandemic, i.e., reduction in voluntary blood donation. The study used results of a structured e-questionnaire to assess knowledge, attitude, and practices of blood donation, which can provide a comprehensive understanding of the factors affecting blood donation behavior especially during the pandemic. It focuses on undergraduate students who are potential donors in times of regular or increased need. The use of an online survey allowed for collection of a large sample size of 232 participants. Findings of the present study will significantly contribute to the existing literature on Voluntary blood donation practices. It will also provide insight on the reasons for nil/reduced practice during the COVID-19 pandemic.

However, the study has a few limitations. This study was a snapshot of a particular period and need not be representative. Purposive snowball sampling can lead to selection bias. Since this study was an analysis of data that was procured through an online survey the accessibility to the internet may have hampered the total number of responses received. The initial survey's design is cross-sectional; thus, it is not possible to comment on the association between knowledge and practice. The study used a self-reported e-questionnaire, which may lead to information bias, however, checks and balances such as age range check based on study inclusion criteria, controls to avoid multiple responses from the same email ID and phone number were incorporated in the questionnaire to minimize bias. Our study design also did not allow us to determine all the barriers associated with voluntary blood donation during the pandemic.

CONCLUSION

This study provides insights into the knowledge, attitude, and practice of both medical and non-medical participants towards blood donation during the pandemic. The results of the study suggest that there is a need for continuous education and awareness campaigns to address misconceptions and improve knowledge and attitudes towards blood donation. It is essential to promote accurate information regarding blood donation eligibility criteria to ensure the safety and quality of the donated blood. This could also be translated to other epidemics or pandemics that may arise in the future. There is a high willingness to donate blood in the future and more awareness campaigns can increase the number of blood donations during the future. It is important to consider profession and gender when developing strategies to encourage blood donation. More training and education programs for blood bank staff are required to ensure provision of current and accurate information to donors.

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