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Original Article

Perception and Practice of Blood Donation Among Medical Students in Southern Rajasthan, India

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ABSTRACT

Introduction: Despite all efforts, there is a gap in the demand and supply of blood donation in India. Medical students play a crucial role in promoting and mobilizing blood donation among potential youth. The present study attempted to ascertain the knowledge, attitude, and practice as well as factors associated with actual blood donation among medical students at various stages of their studies.

Materials and Methods: The cross-sectional study was conducted during May-June 2021using a pre-tested semi-structured questionnaire through Google form among 346 medical students representing first, second and third year MBBS. The aggregate scores for knowledge and attitude worked out for each student and analyzed for gender effect, actual practice, correlation between knowledge and attitude score and factors contributing to it using z- test, correlation coefficient test, and chi-square test respectively.

Results: The blood donation by students was found significantly associated with sex, age, and phases of the MBBS curriculum ($p<0.05$). The mean attitude score of female students (6.90) was higher compared to male students (6.60). There was a significant correlation ($r=0.371$) between the overall knowledge and attitude score of students towards blood donation.

Conclusions: The gender, age, and phase of study of medical students are significant factors contributing to actual blood donation. The higher attitude of female students could not be transformed into the actual practice of blood donation. Special efforts are required to enthuse medical students in general and female students in particular towards blood donation.

Key Words: Attitude; Blood Donation; Knowledge; Medical Students; Practice

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INTRODUCTION

The noble action of donating a small quantity of blood by a person to another one who requires blood for his/her survival without any adverse effect on the donor is termed as blood donation. Formal blood donation was started in India in 1942 by the Red Cross Society with the establishment of the first blood bank in Kolkata at the All India Institute of Hygiene and Public Health to cater to the needs for blood by the wounded soldiers during Second World War. For 1.35 billion people of India, about 13.5 million blood donors are

required every year, out of which 11 million are collected through voluntary non-remunerated blood donations which are only about 82 % of the requirement. If about 1% of the nation's population donates blood voluntarily, the blood requirement can be met out and the WHO theme for 21st century "Safe blood starts from me, blood saves life" can become a reality[1,2]

Blood, enabling the human body system to function its multifarious functions, cannot be produced on a commercial basis. The demand for blood can only be met out through voluntary donations from willing donors. Remunerated blood donation is banned in India since 1998 as per the Hon'ble Supreme Court and family replacement accounts for less than half of the demand. Keeping in view the National Blood Policy (NBP) 2002, voluntary blood donation can be a feasible option through effective donor education, motivation, and encouragement.[3]

Blood transfusion is required in various situations such as accidental injuries, surgical conditions, malignancies, pregnancy, and other medical conditions. Various efforts such as the celebration of 1st October as National Blood Donation Day could not make it possible to meet even a large part of blood needs from voluntary donors whereas safe and quality blood has to come from healthy donors only.[4] Concerted efforts are needed to meet the demand for safe blood through blood donation camps and other such events.[5]

Blood transfusion is a crucial part of the health delivery system. The ensured supply of safe blood at all times is possible through stable, regular, voluntary, and unpaid blood donation. Once the integrated blood supply network is established at a national level for collection, testing, processing, storage, and distribution and a voluntary group to donate blood is ensured, saving life for millions of people would become a reality.[6]

For achieving the WHO's advocacy for 100 percent voluntary non remunerated donor blood, more and more young voluntary donors have to come forward. The dynamic, healthy, young donors have to be encouraged, motivated, educated, and inspired to be the major voluntary donors for safe blood. The medical students have many folds of responsibility as savers of life through their professional service, as educators to the youth as blood donors and as blood donors themselves to save the life of those seeking blood in medical college hospitals.[7]

There could be many factors for the demand-supply gap in the blood which included fear for needle insertion, lack of knowledge about blood type and its demand, apprehension of risk in getting infected or blood becoming decreased in volume, adverse effect on studies, and so on. The lack of motivation, non-accessibility of blood collection centers, the criterion of testing blood for quality, the paperwork and time is taken for the process and anxiety in parting with self-accumulated blood and many others can be the contributing factors preventing medical students from donating blood.[8] Therefore, it is necessary to explore the knowledge and attitude level of medical students towards voluntary blood donation and also the factors preventing or promoting the noble cause of blood donation.

The objectives of the study were to assess the knowledge and attitude level of medical students on voluntary blood donation , to study the extent of the practice of blood donation by the medical students, their perception, and factors influencing for it

MATERIAL AND METHODS:

The cross-sectional study was conducted at the Pacific Institute of Medical Sciences (PIMS) from May 2021 to July 2021. The respondents selected for the study included the first, second, and third year MBBS students of the Medical College. Considering the prevalence of adequate knowledge as 65%, the required sample size came out to be 350.[9] The study was conducted after getting ethical clearance from Institutional Human Ethics Committee (IHEC). The pre-structured questionnaire was got filled by the selected students using the Google-form method of data collection. The questionnaire consisted of general background information and the items related to knowledge, attitude, and practice of blood donation among medical students. The knowledge aspects consisted of 14 statements with the scope for the highest knowledge score of 14. The attitude aspects included 10 statements with the highest score of 10. For assessing the perception of students on blood donation seven statements (positive and negative) were posed. The response of each student was obtained on a seven-point Likert scale ranging from a very high level of agreement to the least level of agreement. (7- very high level of agreement; 6- high level of agreement; 5- moderate agreement; 4- agreement; 3- partial agreement; 2- low level of agreement and 1- very low level of agreement)

Statistical Analysis

The association of sex, age, phases of MBBS course, family background as rural and urban, families having medical professionals, and history of any family member received blood transfusion was tested through chi-square test. The gender effect on knowledge and practice was tested through the SND test of mean scores for knowledge and practice for male and female students. The association of knowledge score with attitude score was tested through Karl Pearson coefficient of correlation.

RESULTS

In all, 346 MBBS students studying in different phases filled and submitted the forms either online or offline, out of which 178 (51.4%) were male and 168 (48.6%) were female; 124 (35.8%) were studying in I MBBS, 104 (30.0%) were in II MBBS and 118 (34.1%) were in III MBBS. Out of 346 respondents, 108 ever donated blood and 238 have not donated blood so far. The gender shares of respondent students did not show any major difference. However, the male 178 (51.4%) blood donors outnumbered female blood donors 168 (48.5%). As the phases of education increased the share of blood donors also increased implying that the duration of stay at the college campus prompted the students to donate blood to the needy. Remarkably, the share of rural students who donated blood was higher than urban students with 32 (38.6%) and 76 (28.9%) respectively. The family members of 62 respondents (17.9%) received a blood transfusion during the recent past. The blood donation was found significantly associated with sex, age, and phases of the study. The family background was found to have association with blood donation at a 9.8% level of significance. The presence of medical professionals in the family did not make any significant effect on blood donation and the same is the situation with family members received blood (Table 1).

Table1: Association of blood donation with the socio-demographic characteristics (n=346)

Characteristics		Ever donated blood		Chi-square value	p-value
		Yes n (%)	No n (%)		
Sex	Male (n=178)	77 (43.3%)	101 (56.7%)		
	Female (n=168)	31 (18.5%)	137 (81.5%)	24.770	<0.0001
Age	<20 years (n=171)	45 (26.3%)	126 (73.7%)		
	>20 years (n=175)	63 (36.0%)	112 (64.0%)	3.77	P=0.052
MBBS Batch	MBBS Batch 2016 (n=124)	55 (44.4%)	69 (55.6%)		
	MBBS Batch 2019 (n=104)	34 (32.7%)	70 (67.3%)	22.630	P<0.0001
	MBBS Batch 2020 (n=118)	19 (16.1%)	99 (83.9%)		
Residence	Rural (n=83)	32 (38.6%)	51 (61.4%)	2.74	P=0.098
	Urban (n=263)	76 (28.9%)	187 (71.1%)		
Medical professional in family	Yes (n=172)	54 (31.4%)	118 (68.6%)		
	No (n=174)	54 (31.0%)	120 (69.0%)	0.005	P=0.942
Family members received blood transfusion	Yes (n=62)	22 (35.5%)	40 (64.5%)	0.641	P=0.423
	No (n= 284)	86 (30.3%)	198 (69.7%)		

The average score of attitudes significantly differed between male and female students. However, there was no significant difference in average knowledge score on blood donation between male and female students. The higher attitude score for females over a male and remarkably low share of females donating blood (18.55%) compared to males (43.3%) reveal that the better attitude of female students towards blood donation could not be converted into practice. It implies that concerted efforts are needed to enthuse female students for blood donation (Table 2).

Table 2: Difference in gender effect on knowledge and attitude score

Particulars	Sex	Score		t-test p-value
		Mean	SD	
Knowledge	**Male**	10.11	2.09	0.22
	Female	10.38	2.08	
Attitude	**Male**	6.60	1.38	0.04
	Female	6.90	1.37	

The positive and significant correlation coefficient between knowledge score and attitude score is also a promising situation as knowledge enhancement on blood donation led to a positive attitude towards blood donation which can be translated into practice so that medical students can be a better source for promotion of blood donation (Table 3).

Table 3: Correlation analysis of various factors

Characteristics	Mean with SD	Pearson's correlation coefficient	p-value
Knowledge Score	10.24 ± 2.090	0.371	<0.001
Attitude Score	6.76 ± 1.383		

The overall perception of students on seven statements of positive and negative nature recorded on the Likert scale showed an overall high degree of consistency as evidenced by a low (17.60%) coefficient of variation (CV). Remarkably two positive statements that "Blood donation is for a noble cause" and "Voluntary blood donation to blood bank saves many life" showed a high degree of consistency in response as clear from low CV values of 19.6% and 18.10% respectively. The statement that "Blood donation helps to get recognition from the recipient" also showed moderate consistency with a CV value of 28.27%. For all other statements, there was a large variation in scores with a CV greater than 50% in scores given by the respondents (Table 4).

Table 4: Perception score on blood donation using seven points Likert scale

Statements	Mean Score	Standard Deviation (SD)	Coefficient of variation (CV)
Blood donation is for a noble cause	6.12	1.20	19.60
Blood donation is risky for the donor	2.58	1.48	57.36
Blood donation can cause health problems to the donor	2.90	1.47	50.68
Blood donation helps to get realization from the recipient	4.81	1.36	28.27
Voluntary blood donation to blood bank saves much life	6.24	1.13	18.10
Family members do not promote blood donation	2.77	1.59	57.40
A cash donation is similar to a blood donation	3.8	1.90	57.92
Overall	4.09	0.72	17.60

The distribution of students according to blood groups revealed that about 33.2% of students were having B+, 29.48% were O+, 19.65% were A+ and remaining in other groups with lowest in O-which was 0.58% (fig.1).

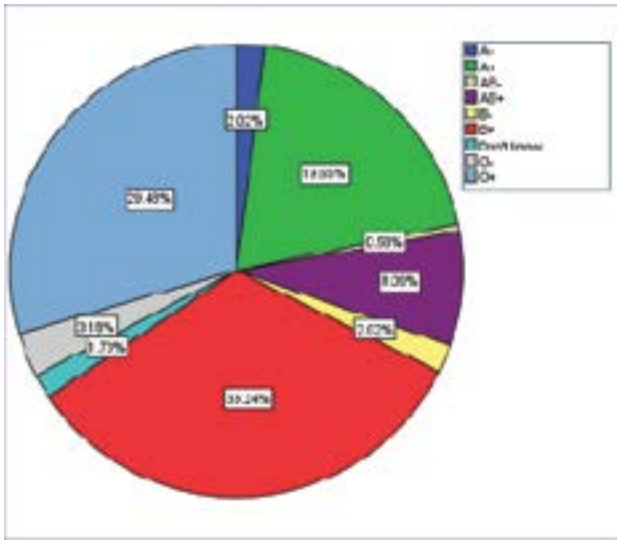

Figure1: Distribution of blood group among the study participants (n=346)

The study showed that recommended minimum age of blood donation, minimum body weight required for blood donation, minimum hemoglobin for blood donation were correctly answered by 304 (88.1%), 295 (85.5%) and 208 (60.3%) respectively (fig. 2).

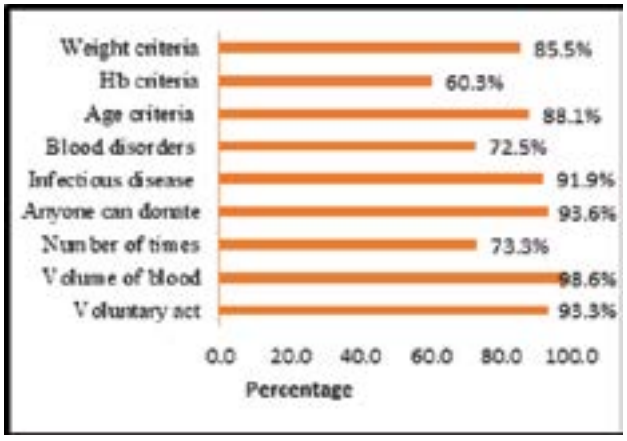

Figure2: Extent of correct knowledge on blood donation among the study participants

DISCUSSION

Globally, numerous sensitization programs and surveys have been conducted regarding the knowledge, attitude, and practice of blood donation to sensitize the general people towards blood donation. In the present study,178 (51.4%) male participants were slightly higher in comparison to 168 (48.6%) females. While in contrast, the study done by Chopra D et al showed female participants (57.0%) were more in comparison to males (43.0%).[10] In another study done by Chauhan R et al found that 133 (56.5%) females were higher in comparison to 102 (43.4%) males.[8] The current study showed that only 31.2% of students have donated blood. In other studies the share of blood donation was 23.0%, 46.0%, 18.0%, and 16.0% respectively.[10-13] In the present study 43.3% male and 18.5% female students donated blood indicating dominance by male students in actual blood donation. The study done by Chopra D et al found that 72 % male and 28% female students had donated blood and the difference was statistically significant (p-value- 0.00).[10] Dawadi P et al[14] showed that out of 126 males, 28 (22.2%) and out of 59 females, 13 (22.03%) were found to have donated blood previously. The present study showed that there was a significant association between blood donation with male students exceeding female students in actual blood donation. Similar results were also obtained in the study done by Nwogoh B et al.[15]

The present study revealed that blood donation was more among third year MBBS students and least among first-year MBBS students. Another study carried out by Dawadi P et al also found that blood donation practice was more among final year students 15 (35.71%) and the least among first year 3 (8.57%).[14] It was found in the present study that 19 (16.1%), 34 (32.7%) and 55 (44.4%) students who had donated blood belonged to the first year, the second year, and final year while a study done by James T et al showed 9.1%, 37.9% and 42.4% of students who have donated blood belonged to the first year, second year and a final year respectively.[16]

The present study showed that there was a significant difference in attitude between male and female students while in contrast, the study done by Suresh S et al showed that there was no statistically significant difference in attitudes between males and females (p-value = 0.17).[17] It was found in the current study that the percentage of correct responses to questions on knowledge was 76.1% with the mean score of 10.24 while Suresh S et al revealed that the percentage of correct responses to questions on knowledge was found to be 48.09% with a mean score of 7.21 which was referred as moderate score in knowledge.[17]

In the present study, the recommended age of blood donation was correctly answered by 304 (88.1%) study participants. Similar findings were also found in the study conducted by Chopra D et al which showed recommended age of blood donation was correctly answered by 90% of study participants.[10] The present study found that 340 (98.26%) study participants were aware of their blood groups. The study done by Chauhan R et al[8] showed that 225 (95.7%) participants were aware of their blood groups and Meinia SK et al[19] found that 146 (97.3%) respondents knew their blood groups respectively. The high share of awareness of own blood group is a welcome situation.

The present study revealed that 64 (18.5%) had donated blood only once and 44 (12.71%) had donated more than once. The study by Chauhan R et al observed that 30 (55.6%) students had donated blood only once and 24 (44.4%) had donated more than once.[8] Another study by Dawadi P et al[14] showed that among 41 students who have donated blood, 24 (58.54%) students had donated blood only once and 17 (41.46%) had donated more than once. The low share of students donating blood in the present study indicates the need to inspire them towards a noble cause.

The current study indicated that 304 (88.12%) knew the minimum age required for blood donation and 295(85.51%) knew about the minimum body weight for blood donation. The study done by Suresh S et al revealed that 174 students (91.09%) knew that the minimum age required for blood donation was 18 years, while 116 (60.7%) and 94 (49.2%) of them recognized correctly knew the minimum weight and the minimum gap required between two

blood donations.[17] Meinia SK et al revealed that 123 (82%) study participants knew the suitable age group for blood donation.[18]

It was found in the current study that 208 (60.3%) knew about the minimum hemoglobin level for blood donation by the donor. Another study by Meinia SK et al found that 104 (69.33%) study participants knew about minimum hemoglobin levels required for blood donation.[18] The present study showed that 323 (93.62%) students knew that healthy individuals can donate blood while the study by James T et al found that 145 (94.7%) of the students were aware of the fact that healthy individuals can donate blood.[16]

The present study revealed that 340(98.6%) students knew the exact volume of blood that can be donated by blood donor while a study done by James T et al found that 111 (72.4%) of the study group had knowledge about the volume of blood that can be donated.[16] Meinia SK et al found that 125 (83.3%) study participants knew the correct volume of blood which can be donated.[18] The current study showed that 317 (91.9%) students knew the diseases transmitted through blood transfusion. While a study done by James T et al showed 148 (96.7%) of the study participants were aware of the transmission of diseases through blood.[16]

In the present study 322(93.33%) students reported that blood donation should be a voluntary service, while the study done by James T et al showed 150 (98%) of the study population reported that blood donation should be a voluntary service to society.[16] In short, the higher knowledge level of medical students and the positive attitude of female students on blood donation in the study could not be translated into the action of voluntary blood donation seeking concerted efforts to enthuse medical students towards this noble cause.

CONCLUSIONS

The gender, age, and phases of the MBBS study are factors contributing to actual blood donation. The higher attitude of female students could not be transformed into actual practice of blood donation. Family background has no significant effect on actual blood donation. Special efforts are required to enthuse medical students in general and female students in particular towards blood donation.

Limitation

Since it is a survey-based study, it was difficult to establish the causal effect relationship with certainty.

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