

Attitude toward blood donation among medical and nonmedical students across Karachi

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Abstract:

Aim: To evaluate the factors that motivate and discourage medical and nonmedical students from donating blood voluntarily and to assess the level of awareness and knowledge regarding blood donation. **Materials and Methods:** We conducted a cross-sectional descriptive study from August 2011 to May 2012 across different universities of Karachi covering both private and public sector. Predesigned questionnaires were filled by students. A total of 690 students participated in the study, 345 from each. Data collected was analyzed using SPSS Version 17.0. Simple frequencies and percentages were calculated, and Pearson Chi-square and Fisher's exact tests were applied to calculate association between different variables with *P* value set as significant when <0.05 . **Results:** Mean age of the students was found to be between 21 and 23 (64.6%) in medical, whereas in nonmedical, 66.7% fell in this age group. Astonishingly, blood donors in nonmedical (27%) were quite more than that in medical group, where they were only 18%. Males constituted the majority in both of the groups. Most commonly reported factor that motivated blood donation in medical group was feeling of self-satisfaction (40.2%), whereas in nonmedical group, 32.9% reported that they had only donated blood when their friends/family were in need. When asked about the adverse effects after blood donation, weakness was common among both medical and nonmedical, i.e. 46.8% and 46.7%, respectively. Among the factors that impeded our subjects from donating blood were primarily health concerns in medical students (19%), whereas in nonmedical students they claimed they were not approached by anyone and were unaware of the importance of blood donation (34.8%). **Conclusion:** Proportion of blood donors was significantly low in both medical and nonmedical students, especially in females. Most important motivating factor in medical students was feeling of self-satisfaction, whereas in nonmedical students, it was family/friend in need of blood transfusion. Never approached by anyone/awareness about the importance of donating blood was the major discouragement factor seen in both medical and nonmedical groups.

Key words:

Attitude toward donation, blood donation, motivation toward donation, students

Introduction

Each year, an uncountable number of people from all around the world need to be transfused with blood for various reasons. It is estimated that only in the United States, 44,000 blood donations are needed on daily basis.^[1] 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.^[2]

Selection of donors is an important means to improve the overall safety of blood supply.^[3] Voluntary blood donors who donate blood once or twice a year are considered to be the safest^[3,4] as voluntary donors have no reason to give false information about lifestyle factors which might place them at risk of transmitting infectious diseases.^[5] A study by Gibbs and Corcoran reported that 80% of developing countries depend totally or partially on replacement donors. 15% on voluntary/nonremunerated and 25% on paid donations,^[6] raising serious concerns on the

safety of blood supply in developing countries such as Pakistan.

According to Global Database on Blood Safety, in Pakistan, <25% of blood donations are from voluntary unpaid donors. Whole blood donation per 1000 population in Pakistan is 10–19.9 as compared to high-income countries where it is 36.4 donations per 1000 people.^[7] In Pakistan, most of the donations

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come up from replacement donors (70%), and paid donors still make up 10% of the country's blood supplies.^[8]

With ever increasing demand of safe blood for transfusion in Pakistan, there is a need to motivate eligible donors to turn up voluntarily for blood donation regularly, so that our reliance on replacement and paid donors may abate as replacement and paid donors are associated with high risk in comparison to voluntary donors.^[3,4]

Among the factors that motivate blood donation are altruism/humanitarian, personal or family credit, social pressure, replacement, and reward. Factors discouraging donation include fear of needle, contracting an infection and other adverse effects, and medical excuses.^[9,10] A study by Fernández Montoya *et al.* reported that the lack of information (43.6%) and different fears (32.3%) were the principal factors discouraging nondonors from donating blood, whereas donors had less fears about the possibility that donation can affect their health.^[11] Thus, education of the general population and raising their awareness can significantly increase the proportion of voluntary nonremunerated donors.

Sixty-three percent of Pakistan's population is under 25 years of age.^[12] Therefore, motivating healthy young population toward voluntary blood donation is of utmost importance and may substantially narrow the gap between demand and supply of blood. In this study, we focused on young adults in age group between 18 and 26 years who were student of medical or nonmedical university to determine those factors that motivate and inhibit young and educated sector of our society from donating blood and assess the level of awareness and knowledge among them so as to help concerned agencies, both private and government, to plan accordingly and increase the proportion of voluntary donation in our blood supplies.

Materials and Methods

Study design and setting

We conducted a cross-sectional survey in different universities of Karachi extending over the duration of 9 months from August 2011 to May 2012. We made two different sampling frames for medical and nonmedical institutes of Karachi, from both private and public sector, to select five institutes each by computer generated numbers for data collection.

Sample size, technique, and distribution

Sample size was calculated to be 690 by Open Epic Epidemiological Calculator Version 2005 by taking 49% prevalence.^[13] We divided our sample into two equal groups; medical and nonmedical. Representation of each institute in the sample was determined proportionally based on the total number of students in the institute. Those belonging to medical group were student of a medical institute and enrolled in Bachelor of Medicine and Bachelor of Surgery program while those in nonmedical group were enrolled in disciplines other than medicine and health services, mainly engineering, business administration, and computer sciences. We employed purposive sampling to include all those who had passed their higher secondary education and were enrolled in a selected medical or nonmedical institute. All those who had completed their graduation and enrolled in postgraduation

program were excluded from the study. Only voluntary donors were allowed and all kinds of paid/professional donors were not included in the study.

Ethical considerations

Informed consent was taken from all participants and written permission was acquired before data collection from each institute. Ethical considerations were reviewed under the Institutional Review Board of Dow University of Health Sciences and found to be satisfactory.

Data management and statistical analysis

A self-administered, predesigned questionnaire consisting of four sections, was employed to collect data. First section covered general bio data such as age, gender, and specially blood group of the individual. Second section dealt with those who had donated blood and detailed inquiry of factors that motivated them toward blood donation. Moreover, they were asked about any adverse effects they suffered immediately after donating blood and their experience with the services, staff, and the environment at blood bank. Third section was focused on reasons that discouraged participants from donating blood. In the last section, questions on general knowledge and beliefs regarding blood donation were inquired.

Data collected was entered in Epidata software Version 3.1 and analyzed using SPSS version 17.0. Our data was split into two groups and organized accordingly; medical and nonmedical. Simple frequencies and percentages were calculated, and Pearson Chi-square and Fisher's exact tests were applied to calculate association between different variables with *P* value set as significant when <0.05 .

Results

As mentioned earlier, our results were analyzed on the basis of two groups. There was no major difference observed in gender and age composition of these groups. In medical group, males were 43.8% ($n = 151$) and in nonmedical group, males constituted 47.8% ($n = 165$) of the group. For age, we organized our sample into four different groups; 18–20, 21–23, 24–26, and more than 26 years. In medical group, most cases (64.6%, $n = 223$) fell in the age range 21–23 years, followed by those who were aged between 18 and 20 years (32.2%, $n = 111$). Similar results were seen in nonmedical group where most of the students fell in the age group of 21–23 years (66.1%, $n = 228$) followed by 23.8% ($n = 82$) cases who were in 18–20 years.

The percentage of cases who had donated blood in their lifetime in medical group was only 18% ($n = 62$), whereas in nonmedical group, it was 27.5% ($n = 95$). About 64.5% ($n = 40$) cases in medical and 68.4% ($n = 65$) cases in nonmedical group reported that they donate blood once in a year whereas only 21% ($n = 13$) and 19% ($n = 20$) cases in medical and nonmedical group, respectively, reported that they donate blood twice in a year. Blood donation was strongly associated with male gender in both the groups. In medical group, males were 69.4% of those who donated blood ($P < 0.001$), whereas in nonmedical group, the males made up 70.5% ($P < 0.001$) of the cases who were blood donors.

Important factors motivating blood donation in medical group was feeling of self-satisfaction (40.2%) and also friend/family

in need (22.9%). In nonmedical group, most important factor motivating blood donation was family/family in need (32.9%) followed by feeling of self-satisfaction (26.3% $n = 25$). Table 1 summarizes different factors that motivated students toward blood donation.

When inquired about different adverse effects, cases suffered after donating blood, weakness was most common in both medical and nonmedical group, i.e. 46.8% ($n = 29$) and 48.4% ($n = 46$) cases, respectively. About 80.6% ($n = 50$) cases in medical and 65.3% ($n = 62$) cases in nonmedical group reported that they were satisfied with the services and attitude of the staff at blood banks. In medical group, 19.4% ($n = 12$) cases reported that they were displeased by the environment at blood banks, whereas in nonmedical group, the percentage was 21.1% ($n = 20$). Figure 1 summarizes the various adverse effects suffered by blood donors after donating blood.

Among factors that hindered our cases from donating blood, the most important was that they were never approached by anyone for blood donation. About 30.4% cases in medical and 34.8% cases in nonmedical group reported that their reason for not donating blood was dissatisfaction toward preventive measure taken at blood banks. Table 2 summarizes factors that prevented our cases from blood donation.

We inquired our cases for their knowledge and beliefs regarding blood donation, 93.6% ($n = 323$) medical participants and 79.1% ($n = 273$) nonmedical participants showed concern over the risk of acquiring HIV/AIDS and hepatitis B and C, whereas 95.1% ($n = 328$) in medical and 81.7% ($n = 282$) in nonmedical group thought that there is a chance of transfusion with wrong blood group. Rests of the findings are summarized in Table 3.

Discussion

In Pakistan, most of the blood donations come from replacement donors, whereas the contribution of voluntary nonremunerated donations is significantly low.^[7,8] University students are the potential source of safe and healthy blood supply that can be easily approached and their misconceptions and fears addressed because of their education and openness to discussion on cultural taboos and fears.

In our study, proportion of blood donors was significantly low, both in medical (18%) and nonmedical students (27%). The numbers are comparable to similar studies conducted on university students by Wiwanitkit and Hosain *et al.*^[14,15] Among the donors, significant proportion reported that they donate only once a year. Surprisingly, proportion of blood donors in medical students was lower than that of nonmedical students. A study by Rajagopalan and Pulimood reported that out of 307 medical and nursing students, only 119 were donors. However, there was no significant difference among donors and nondonors with regard to their attitude toward blood donation.^[15] In our study, knowledge regarding blood donation was greater among medical students, but lower number of donors in medical students indicate greater knowledge does not lead to blood donation,^[14,15] and there must be other factors that play their part that should be carefully investigated and taken into account to drive university students to voluntarily turn up for blood donation.

Table 1: Motivating factors for blood donation

Motivating factors toward blood donation	In medical students	In nonmedical students
For public promotion	12.1	17.5
For monetary benefit	1.6	1.1
Interested in trying	3.1	15.8
Family/Friend in need	22.9	32.9
National disaster	2.4	1.1
Convenient place for donation	15.5	4.2
Feeling of self-satisfaction	40.2	26.3
Free blood testing	2.2	1.1

All numbers listed above are percentages

Table 2: Factors hindering in blood donation

Factors hindering blood donation	In medical students	In nonmedical students
Not approached by anyone	30.4	34.8
Fear of pain	6.4	11.3
Never had time to donate	10.9	8.2
Health concerns	19.0	18.6
Rejected as a donor	17.1	6.8
Not satisfied with preventive measures	16.2	20.3

All numbers listed above are percentages

Table 3: Blood donation knowledge and beliefs

Knowledge and beliefs	In medical group (%)	In nonmedical group (%)	P
Are you aware of blood shortage in the city?			
Yes	71.3	60.6	0.002
No	28.7	39.4	
Do you know the minimum age of blood donation?			
Yes	66.4	34.5	0.000
No	33.6	65.5	
Do you know how long the blood can be stored safely?			
Yes	46.4	16.2	0.000
No	53.6	83.8	
Are you aware of the test performed on donated blood?			
Yes	66.4	30.1	0.000
No	33.6	69.9	
Do you think demand of blood will increase in future?			
Yes	67.2	55.4	0.000
No	32.8	44.6	
Do you think there is risk of being transfused with wrong blood group?			
Yes	95.1	81.7	0.000
No	4.9	18.3	
Do you think there is risk of getting HIV/AIDS or hepatitis B or C?			
Yes	93.6	79.1	0.000
No	6.4	20.9	
Should the patient be informed prior to transfusion?			
Yes	95.1	89.3	0.008
No	4.9	10.7	
Does the patient has right to refuse transfusion?			
Yes	98	87.2	0.000
No	2	12.8	

In our study, most donors were male, and there was a statistically significant association between blood donation and male gender.

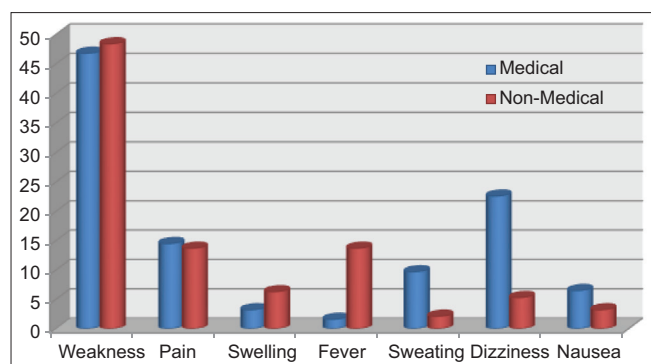


Figure 1: Adverse effects of donating blood

This is in contrast to reports from developed world such as Europe and United States where male to female ratio of blood donors is approximately one.^[1,16] A study by Mumtaz *et al.* highlighted the importance of cultural taboos in Pakistan that prevent women from donating blood, and it is only in inevitable circumstances when women are required to donate blood.^[17] Bani and Giussani reported that two factors; higher rate of deferrals and adverse reactions in women are responsible for low proportion of female donors.^[18] In university students, the two aforementioned factors may be the primary cause of a low number of female donors and cultural taboos may not be important because of higher educational and socioeconomic status as compared to general population.

Medical students in our study reported that feeling of self-satisfaction, friend/family in need, and convenient place to donate blood motivated them to donate blood. Important consideration is significant association of blood donors in medical group and convenient place to donate as motivating factors. Because of background knowledge, medical students generally have positive attitude toward voluntary blood donation^[16] and they may be easily motivated toward blood donation by facilitating them to donate blood at their university campus through blood donation drives and campaigns. In nonmedical group, altruism, friend/family in need, and public promotion were reported to be motivating factors. Public promotion to increase the level of awareness and address misconception and fears about blood donation can be achieved by organizing seminars, conferences, and more importantly blood donation drives at university campuses so that students may donate their blood at their campuses and they do not have to go anywhere else. A study by France *et al.* reported the effectiveness of brochures and audio-visual material on blood donation in enhancing willingness to donate blood among young adults regardless of their initial attitudes toward blood donation.^[19] Overall, altruism and friend/family in need are the most important motivating factors reported by both medical and nonmedical students in our study which is consistent with the previous literature.^[9,10,11] Family replacement donors are the cornerstone of our blood donation system. If a patient requires blood, the family is responsible for arranging the donor and blood banks obtain blood from family members, irrespective of the blood group^[17] to replenish their supplies because voluntary nonremunerated blood donation is insufficient to maintain the supply of blood to all patients.^[7,8]

Most commonly reported inhibiting factor by nondonors in both medical and nonmedical group was that they were never

approached by anyone for blood donation. This finding is particularly important because a considerable increase in voluntary blood donation can be achieved only by approaching the potential donors at a place convenient to them which in this case is their university campus. A considerable number in both medical and nonmedical group reported that they considered themselves unfit for donating blood. This may stem from the lack of knowledge regarding blood donation. If these nondonors are approached and counseled and screened for fitness to donate blood, they may be motivated to donate blood voluntarily. A study by Alan *et al.* reported similar results in which 42.6% nondonors replied that they were not approached by anybody and 38.3% considered themselves unfit for donating blood.^[20] In our study, 22.4% students in nonmedical group and 17% in medical group reported that factor inhibiting them from donating blood is their dissatisfaction toward preventive measure taken at blood banks. In a study by Vásquez *et al.*, 73.4% cases reported distrust over aseptic techniques observed by blood banks. Moreover, a significant number in our study, both in medical and nonmedical group, reported that there is risk of transmitting HIV and transfusing wrong blood to patients. Their fear and negative attitude should be addressed by blood banks and concerned agencies so that potential donors who do not turn up for voluntary blood donation because of lack of trust over safety measures may be motivated to donate blood voluntarily.

A possible limitation in our study is that we focused on university students only whose education and socioeconomic status are generally higher from our general population, so these results may not be applied to the general population. However, as young and healthy sector of our society, university students are the potential source of safe blood, and this study gives clues to what motivates and hinders them from donating blood voluntarily and if these findings are addressed properly, we may not have to rely completely on replacement donors to fulfill our requirements.

Conclusion

Proportion of blood donors was significantly low in both medical and nonmedical students, especially in females. Blood donation was significantly associated with male gender in both groups. Most important motivating factor in medical students was feeling of self-satisfaction, whereas in nonmedical students, it was family/friend in need of blood transfusion. Factor inhibiting from donating blood was that they were never approached by anyone for blood donation in both medical and nonmedical groups. Overall, the majority considered blood transfusion carried the risk of infections with HIV and hepatitis.

Recommendations

The role of university administration and blood banks and agencies is very important. Both should collaborate and arrange frequent workshops, seminars, and blood donation camps where students' concerns, fears, and misconceptions inhibiting them from donating blood should be addressed and they could donate blood conveniently at their university campus, and they do not have to take time out of their busy schedule.

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Conflicts of interest

There are no conflicts of interest.

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