

Knowledge, attitude and practice of blood donation among health professions students in Saudi Arabia; A cross-sectional study

Mohammed A. Alsalmi^{1,2}, Hani M. Almalki^{1,2}, Abdulrahman A. Alghamdi^{1,2},
Badr A. Aljasir^{1,2,3}

¹College of Medicine, King Saud Bin Abdulaziz University for Health Sciences, ²King Abdullah International Medical Research Center, ³Department of Community and Preventive Medicine, King Abdulaziz Medical City, Ministry of the National Guard – Health Affairs, Jeddah, Saudi Arabia

ABSTRACT

Introduction: World Health Organization advocates that 3-5% of the population should donate blood yearly. However, the donors in Saudi Arabia (SA) in 2011 represented 1.46% of the population. This study aimed to assess knowledge, attitude and practice concerning voluntary blood donation among health professions students in Saudi Arabia and to determine the associated factors. **Methods:** This is a cross sectional study on 598 students. Chi-square and Fisher tests were used to analyze the significant association of blood donation and influencing factors. **Results:** Majority of respondents (360; 60.2%) showed sufficient knowledge regarding blood donation. A total of 593 participants (99.2%) believed that blood donation is important for the community. Around 180 (30.1%) of the respondents have donated blood before. Out of the participants, 422 students (70.6%) reported that they did not take any courses concerning blood donation in their colleges. However, 502 (83.9%) showed a high willingness to donate blood if their colleges organize a blood donation camp within campus. There was a significant association between knowledge level, current academic level and gender with practice of blood donation. **Conclusion:** Saudi health professions colleges' role in promoting blood donation was notably missed. Students showed high willingness to donate blood if a blood camp was organized within the campus. The implementation of encouragement campaigns and educational sessions within the campus will have a great effect on blood donation.

Keywords: Blood donation, knowledge, perception, Saudi Arabia

Introduction

Blood is an essential part of human life and blood donation has become a necessity that every society must take into consideration.^[1,2] Nowadays, both developing and developed countries are facing difficulties to find regular donors.^[3] The number of blood banks in Saudi Arabia is 251.^[4] World Health Organization (WHO) advocates that 3-5% of the population

should donate blood every year.^[1] Applying this recommendation in Saudi Arabia, in 2010, the whole population was 27,136,977, so the ideal number of donors would range from 814,109 to 1,356,849.^[5] However, the number of donations according to the central statistics in 2011: 341,688 blood units.^[6]

In Saudi Arabia, youths comprise high percent of its population.^[5] Out of them, healthcare professions students are one of the most that have knowledge of the importance of donation. Assessing awareness in them gives an insight to the level of awareness and the misbeliefs they may have.

Address for correspondence: Dr. Mohammed A. Alsalmi, King Abdulaziz Medical City, Makkah - Jeddah Hwy, Jeddah 22384, Saudi Arabia.
E-mail: alsalmimo@gmail.com

Received: 23-05-2019 Revised: 26-05-2019 Accepted: 10-06-2019

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_415_19

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Alsalmi MA, Almalki HM, Alghamdi AA, Aljasir BA. Knowledge, attitude and practice of blood donation among health professions students in Saudi Arabia; A cross-sectional study. J Family Med Prim Care 2019;8:2322-7.

The present study assessed the knowledge, attitude and practice concerning voluntary blood donation among health professions students in Saudi Arabia, and to determine the factors affecting blood donation.

Methods

Study design, sampling and sample size

A cross sectional study was conducted during the period between 2014 and 2015 on Saudi health professions students from 40 Saudi universities registered at Ministry of Education.^[7,8] This study has been approved by the Institutional Review Board of King Abdullah International Medical Research Center.

A quota sampling technique was used to ensure that the sample was representative. This was done based on the percentage that each major's students represent to the population, according to the latest statistics by the Saudi Ministry of Education in 2013.^[8,9] With 95% confidence level and 4% margin of error, the sample size was 598 participants. If the participants of one university did not respond, reminders were sent to them.

Survey instrument

A new questionnaire, consisting of 3 sections and a total of 40 questions, was developed. The first section targeted sociodemographic characteristics. The second tested knowledge and attitude toward blood donation. The third investigated practice and barriers along with universities' role. Then it was translated into Arabic.

The questionnaire had been reviewed for face and content validation by preventive medicine and epidemiology experts in King Abdul-Aziz Medical City, Jeddah. A pilot study was conducted on 55 students at King Saud bin Abdul-Aziz University for Health Sciences in Jeddah. Finally, to check for the internal consistency, Cronbach's alpha was calculated for the 2 sections of the questionnaire to be 0.61 (knowledge and attitude) and 0.64 (practice and universities roles). The Cronbach's alpha for the study questionnaire was found to be 0.68.

Data analysis

Data management and analysis were done using Microsoft Office Excel 2013 and Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistical analyses were used to report frequencies with percentages for categorical variables and means with standard deviations for continuous variables. The Chi-square test was used to assess for significant associations between practice of blood donation, knowledge level and demographic characteristics. Significant variables were further analyzed using multivariate regression analysis with results being reported as odds ratio (OR) and 95% confidence interval (CI). *P* value < 0.05 was considered of statistical significance.

Results

Demographic characteristics

A total of 598 participants were included in the study (58% males and 42% females). The mean age of all participants was 21 ± 2. Most of the participants were students in public universities 91%. Details of demographic characteristics are summarized in Table 1.

Knowledge and attitude toward blood donation

Out of 12 questions assessing the knowledge, the mean of right answers number by participants was 8 answers. The majority of respondents (360; 60.2%) showed sufficient knowledge (≥ 8 right answers to questions assessing knowledge), while (238; 39.8%) showed below average knowledge regarding blood donation. In terms of attitude towards blood donation, most of the sample delivered a positive attitude regarding blood donation. A total of 593 participants (99.2%) believed that blood donation is important for the community and 265 (44%) of them had a positive feeling about blood donation procedure followed in blood banks. Moreover, the majority reported willingness to donate blood upon request from relatives (586; 98%) or non-relatives in need (538; 90%). Details of answers to specific questions about knowledge and attitude toward blood donations are shown in Tables 2 and 3, respectively.

Practice of blood donation and universities role in promotion

Patterns of blood donation practice and the barriers from regular blood donation are illustrated in Table 4. Around 180 (30.1%) of the respondents have donated blood before. Of them, 138 (76.6%) were males and 76 (42.2%) donated blood for once only. There was 429 (71.7%) participants who did not know that Saudi government offers awards for those who donate blood regularly. Around 65% of the participants believed that blood donation is a religious duty. Public media had a role in promotion of blood donation as

Table 1: Demographic characteristics of the participants (n=598)

Demographic variables		Mean (SD)/n (%)
Age		21 (2)
Gender	Male	344 (57.5)
	Female	254 (42.5)
Specialty	Medicine	257 (43)
	Nursing	36 (6)
	Dentistry	38 (6.4)
	Applied medical sciences	109 (18.2)
	Pharmacy	44 9 (7.4)
	College of sciences and health professions	93 (15.6)
Public Health and Health Informatics		21 (3.5)
	Junior Students (1 st - 3 rd year)	394 (65.9)
	Senior Students (4 th -6 th year)	204 (34.1)

Table 2: Knowledge on blood donation among the participants (n=598)

Question	n	Percentage
Do you know the common blood groups?	598	100
Can a donor be infected by donating blood?	Yes	286 47.8
	No*	237 39.6
	I don't know	75 12.5
How often can an individual donate?	Weekly	16 2.7
	Monthly	63 10.5
	Three times Monthly*	261 43.6
	Six times Monthly	120 20.1
	Yearly	9 1.5
	I don't know	129 21.6
Who is able to donate blood?	Men (All ages)	7 1.2
	Women (All ages)	0 0.0
	Young males/females	5 0.8
	Old males/females	1 0.2
	Any Healthy Adult*	585 97.8
	Anyone who is diseases	0 0.0
What volume of blood is collected during each donation?	150-200 ml	55 9.2
	400-450 ml*	205 34.3
	700-750 ml	19 3.2
	1000 ml	30 5.0
	I don't know	289 48.3
	What is the duration of a donation process?	Less than 20 Min
20 - 40 min*		131 21.9
More than 60 min		10 1.7
I don't know		141 23.6
Is blood required in emergencies?	Yes*	590 98.7
	No	5 0.8
	I don't know	3 0.5
Can blood be stored?	Yes*	564 94.3
	No	34 5.7
	I don't know	0 0.0
Can blood be donated while keeping a fast?	Yes	115 19.2
	No*	377 63.0
	I don't know	106 17.7
Is there any age limitation on blood donation?	Yes*	408 68.2
	No	66 11.0
	I don't know	124 20.7
Can women donate blood if she is pregnant?	Yes	15 2.5
	No*	370 61.9
	I don't know	213 35.6
Can people with any blood group donate blood?	Yes*	474 79.3
	No	92 15.4
	I don't know	32 5.4

* Correct answer

353 (59.0%) participants had come across calls for donation in public media.

Regarding the role of colleges in encouraging students to donate blood, 422 students (70.6%) reported that they did not take any courses or lectures concerning blood donation in their colleges. However, colleges of 337 (56.4%) participants had organized blood donation campaigns. Out of the students, 502 (83.9%) showed a high willingness to donate blood if their colleges organize a blood donation camp within campus.

Table 3: Attitude toward blood donation among the participants (n=598)

Question	n	Percentage
Will you donate blood when a patient relative needs?	Yes	586 98.0
	No	4 0.7
	I don't know	8 1.3
Will you donate blood to anonymous patients?	Yes	538 90.0
	No	39 6.5
	I don't know	21 3.5
Should donors be giving a gift/money for donation?	Yes	156 26.1
	No	442 73.9
	I don't know	0 0.0
Do you feel that donation is important for community?	Yes	593 99.2
	No	3 0.5
	I don't know	2 0.3
What is your feeling about the procedure in blood banks/hospitals?	Positive	263 44.0
	Negative	69 11.5
	Neutral	266 44.5
Do you agree with blood importation from abroad?	Yes	78 13.0
	No	520 87.0
Do you think blood donation is a religious duty?	Yes	387 64.7
	No	108 18.1
	I don't know	103 17.2
Do you think being a health profession student, encourages you to donate blood?	Yes	201 33.6
	No	353 59.0
	I don't know	44 7.4

Barriers and motivations for blood donation

The most common reported barrier from blood donation by donors was various fears from donation (67; 16%), in contrast to health reasons (85; 47.2%) according to non-donors. Around 286 (47.8%) students expressed that appreciation certificates are the best motivations for them to donate blood, while, while 226 (37.8%) preferred academic support such as bonus marks in the courses they take. Details of barriers and motivations for blood donation are shown in Table 5.

Association between demographics, knowledge level and practice of blood donation

There was a significant association between knowledge level and practice of blood donation $\chi^2(1) = 49.5, P \text{ value} < 0.001$, between current academic level and the practice of blood donation $\chi^2(1) = 10.95, P \text{ value} = 0.001$, and between gender and the practice of blood donation $\chi^2(1) = 38.62, P \text{ value} < 0.001$. On binary logistic regression, we found that students with sufficient knowledge were more likely to have donated blood before (OR = 4.94, 95% CI = 3.14-7.77), along with those in senior years (OR = 1.6, 95% CI = 1.06-2.41) and male students (OR = 4.61, 95% CI = 3.00-7.06). Details about association between demographics, knowledge level and practice of blood donation are shown in Table 6.

Discussion

Blood donation is a life-saving procedure that necessitates counselling as an essential component of care for all individuals

Table 4: Practice of blood donation among the participants and universities role in promotion (n=598)

Questions		n	Percentage
Have you ever donated blood before?	Yes	180	30.1
	No	418	69.9
If donated blood before ... How many times?	Once	76	12.7
	Twice	45	7.5
	Three to four times	26	4.3
	More than five times	33	5.5
	I have not donated blood	418	69.9
When was the last time you donated blood	In the current year	101	16.9
	Before one year or more	79	13.2
	I have not donated blood	418	69.9
If you are a donor, where was the last time you donate your blood?	In the hospitals or blood banks of the ministry of health	154	25.8
	In the hospitals or blood banks of the military institutions	19	3.2
	In private hospitals or blood banks	7	1.2
	I have not donated blood	418	69.9
If you donated blood before, will your last experience motivate you to donate again?	Yes	160	26.8
	No	20	3.3
	I have not donated blood	418	69.9
If you are a donor, did you donate blood regarding someone asking for in social media websites (Twitter, Facebook, What's app ... etc.)	Yes	36	6.0
	No	144	24.1
	I have not donated blood	418	69.9
Did you feel any side effects after donating blood?	Yes	29	4.8
	No	151	25.3
	I have not donated blood	418	69.9
If you donated blood ... Why did you donate blood in your last donation?	A friend or relative needed blood	21	3.5
	Voluntary	148	24.7
	Rewarding	0	0.0
	To get the car license	11	1.8
	I have not donated blood	418	69.9
Have you ever seen any public media that calls people to donate blood?	Yes	353	59.0
	No	175	29.3
	I don't know	70	11.7
Do you encourage relatives/friends to donate their blood voluntarily?	Yes	395	66.1
	No	203	33.9
Does your family encourage you to donate blood?	Yes	236	39.5
	No	362	60.5
What is your parent's attitude regarding blood donation?	Supportive	230	38.5
	Against blood donation	68	11.4
	Neutral	98	16.4
	I don't know	202	33.8
Do you know that the Saudi government offers for those who donates their blood regularly?	Yes	169	28.3
	No	107	17.9
	I don't know	322	53.8
Have you ever received blood before?	Yes	27	4.5
	No	571	95.5
Have you had lectures/courses regarding the importance of blood donation in your college?	Yes	176	29.4
	No	422	70.6
Has your college organized a blood donation camp, or regulars ones, since you attended it?	Yes	261	43.6
	No	337	56.4
If your college organizes a blood donation camp within the campus, would you participate and donate your blood?	Yes	502	83.9
	No	96	16.1

who present themselves for it. Counselling in primary health care limits the loss of donors, assist in the informed consent and detects risky donors.^[10] Understanding people's knowledge and attitude towards this procedure may aid family physicians in their interaction with such group.

The provision of enough storage of blood in Saudi Arabia represents a challenge to health service providers. Various causes contribute to this challenge such as the increase in population size as well as the number of medical facilities in Saudi Arabia. The present study has been conducted on all health profession students

Table 5: Barriers and motivators to donate blood among the study sample (n=598)

	Question	n	Percentage
If you are a non-donor, why have not you donated blood yet?	Fears	40	6.7
	Health reason	85	14.2
	No time	36	6.0
	Common stereotype	8	1.3
	No specific reason	176	29.4
	No one asked me to donate	73	12.2
If you are a donor, why do you think non-donors do not donate their blood?	I donated blood before	180	30.1
	Fears	67	11.2
	Health reason	14	2.3
	No time	10	1.7
	Common stereotype	14	2.3
	No specific reason	52	8.7
As a student, what is the best motivation to donate blood?	No one asked them to donate	23	3.8
	I have not donated blood	418	69.9
	Money/Gift for each donation	86	14.4
	Approved certificates	286	47.8
	Academic support and extra marks	226	37.8

Table 6: Association between blood donation practice and multiple predictive variables (n=598)

Independent variables		Previous Blood donation (s)		P
		No	Yes	
		n (%)	n (%)	
Knowledge Level	Below-average knowledge	205 (49)	33 (18.3)	<0.001
	Sufficient knowledge	213 (51)	147 (81.7)	
Current Academic Level	Junior Students	293 (70.1)	101 (56.1)	0.001
	Senior Students	125 (29.9)	79 (43.9)	
Gender	Male	206 (49.3)	138 (76.7)	<0.001
	Female	212 (50.7)	42 (23.3)	

all over the Kingdom, to assess the various factors contributing to knowledge, attitude, and practice of blood donation.

In the current study, 30.1% of students reported a history of previous donation. Among males, 40.1% have donated blood, whereas only 16.5% of female students donated. Similarly, in another study in Saudi Arabia,^[9] 66% of males and 13% of females were previous donors. Also, percentage of donors in this study was higher than the number of donors in all-professions students in a previous study conducted on university students in Jeddah, where the donors' percentage was 19%.^[11] In the present study, the distribution of 180 donors (30%) according to their academic year in all health majors showed an increase in the donation process over progression in the academic years, which is similar to what was observed among medical students in Puducherry, India

where increased of donation practice according to students' progression of academic year (1st year 10%, 2nd year 13% and 3rd year 24%).^[12]

This study results show an acceptable level of knowledge about blood donation. All of participants knew the common blood groups. Moreover, they expressed good knowledge in regards to who can donate blood and whether or not blood is required blood, which was found in 585 (97.8%) and 590 (98.7%), respectively. On the other hand, 361 (60.4%) expressed poor knowledge by thinking that a donor can be infected through blood donation. Also, it is interesting to notice that 50 out of the 598 do not know their blood group, which indicated a deficit personal knowledge, even though they have the basic knowledge about blood. Despite being of the same age group and living in the same country, non-health profession students exhibited lower level of knowledge, which was indicated in another study carried out in the Kingdom, where university students of different major exhibited a level of knowledge that was not up to the mark.^[11]

A significant proportion of the participants showed a strong willingness to donate blood to anonymous patients (90%). This can be interpreted as that altruism is a major factor for blood donation, which was similar to a study in which (83.3%) of students were voluntary blood donors^[13] There are other factors that participants said they would be good motivators for them. Surprisingly, getting money compensation/gifts was not one of them. The best motivator was getting approved certificates (47.8%). Out of all participants, 85.6% rejected the idea of money compensation and gifts. The same was seen in another study in the Kingdom in 2008 where (75%) objected to money compensation.^[14]

Furthermore, the religious aspect plays an important role in motivating Saudis to donate blood. In the current study, 65% believed that blood donation is a religious duty. Higher rates have been reported in other studies in Saudi Arabia, (71%), (91%), respectively.^[6] This considerable response rate may partially be based on the Fatwa (religious ruling) that is placed in most donor centers in Saudi Arabia from the General Presidency of Scholary Research and Ifta'a that advocates donating blood to save the life of patients.

Fear has been considered as the most commonly reported negative attitude on blood donation.^[3,6,15] In the current study, however, non-donor students reported that fear was one of the lowest reasons for not donating (10%). In contrast, donors believed that the main cause that discouraged non-donors from donating was fear (37%).

Saudi health professions colleges' role in promotion of donating blood was notably missed. Most of respondents reported that their colleges had never offer lectures regarding blood donation (70%), neither had they organized blood donation campaigns (56%). However, most of the participants showed willingness to donate blood if blood donation camps arranged

within the campus (84%), and this finding is higher than another Saudi study conducted on university students (70%).^[11] So, blood campaigns can be conducted within universities campuses to provide comfortable access for students.

Conclusion

Both academic level and knowledge of blood donation were significantly associated with the practice. Also, colleges' role in promoting blood donation was notably missed. The implementation of encouragement campaigns that also address some of the false believes, may have a great effect.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Blood Safety and Availability [Internet]. World Health Organization; 2016. Available from: <http://www.who.int/mediacentre/factsheets/fs279/en/>. [Last accessed on 2019 May 09].
2. Safizadeh H, Pourdamghan N, Mohamadi B. University student awareness and attitude toward blood donation in Kerman City. *IJBC* 2009;1:107-11.
3. Karim MR, Alam M, Farazi MMR, Labone RJ. Factors influencing blood donation behavior of university level student in Bangladesh. *JIT* 2012;1:35-40.
4. Health Minister: Establishment of blood Plasma Derivatives Factory in Saudi Arabia [Internet]. Official Saudi Press Agency; 2010. Available from: <http://www.spa.gov.sa/viewstory.php?lang=en&newsid=792636>. [Last accessed on 2019 May 10].
5. The General Population and Housing Census | General Authority for Statistics [Internet]. General Authority for Statistics. 2016 [cited 2019 May 10]. Available from: <http://www.stats.gov.sa/en/13>.
6. Stats.gov.sa. [online]. Available from: https://www.stats.gov.sa/sites/all/modules/pubdlnct/pubdlnct.php?file=https://www.stats.gov.sa/sites/default/files/table_4-34.xlsx&nid=12901. [Last accessed on 2019 Jan 04].
7. Ministry of Higher Education in Saudi Arabia. Deputy Ministry for Planning and Information affairs. 2013. Available from: <http://www.mohe.gov.sa/ar/Ministry/Deputy-Ministry-for-Planning-and-Information-affairs/HESC/Ehsaat/Docs/b1433-1434-3-5.html>. [Last accessed on 2019 May 24].
8. Ministry of Higher Education in Saudi Arabia. The Guideline to the Saudi Universities. Available from: <https://statistics.mohe.gov.sa/DCFiles/Universities-Guide.pdf>. [Last accessed on 2019 May 24].
9. Abolfotouh MA, Al-Assiri MH, Al-Omani M, Al Johar A, Al hakbani A, Alaskar AS. Public awareness of blood donation in Central Saudi Arabia. *Int J Gen Med* 2014;7:401-10.
10. Blood Donor Counselling. Geneva: World Health Organization; 2014.
11. Baig M, Habib H, Haji AH, Alsharief FT, Noor AM, Makki RG. Knowledge, misconceptions and motivations towards blood donation among university students in KSA. *Pak J Med Sci* 2013;29:1295-9.
12. Kowsalya V, Vijayakumar R, Chidambaram R. A study on knowledge, attitude and practice regarding voluntary blood donation among medical students in Puducherry, India. *Pak J Biol Sci* 2013;16:439-42.
13. Chauhan R, Kumar R, Thakur S. A study to assess the knowledge, attitude, and practices about blood donation among medical students of a medical college in North India. *J Family Med Prim Care* 2018;7:693-7.
14. Abdel Gader A, Al Gahtani F, Ramadan A, Osman A, Farghali M, Al-Momen A. Attitude to blood donation in Saudi Arabia. *Asian J Transfus Sci* 2011;5:121-6.
15. Javadzadeh Shahshahani H, Yavari MT, Attar M, Ahmadiyeh MH. Knowledge, attitude and practice study about blood donation in the urban population of Yazd, Iran, 2004. *Transfus Med* 2006;16:403-9.