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KNOWLEDGE, PERCEPTIONS AND BARRIERS OF BLOOD DONATION AMONG ADULTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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ABSTRACT

Blood donation is important for lives saving and the need is unceasing. However, the shortage of blood supply is a common issue. While the public is the main source of blood donation, it is unknown whether they are aware about it. This study was carried out to determine the public's knowledge, perceptions and barriers towards blood donation. A total of 384 male and female respondents were conveniently selected to participate in this study. Data was collected through self-administered questionnaire and analyzed with SPSS software version 22.0. Most of the respondents (60.9%) had never donated blood but their knowledge towards blood donation was high (79.9%). Some misconceptions were indicated among respondents. Afraid of the needle prick, pain or discomfort were the top barriers among non-donors respondents (45.3%). The majority of the respondents believed that blood donation is a practice or selfless concern for the well-being of others (98.7%). A significant relationship was indicated between age and level of education with status of blood donation (p<0.001). The study highlighted that there is a need to eliminate the misconceptions about blood donation in order to increase the number of blood donors in the future.

Keywords: Blood donation, Knowledge, Perception, Barrier, Motivation

INTRODUCTION

Blood donation is important to save life and improve health. It is needed for many conditions that include severe trauma due to accident, thalassemia or as part of preparation for major surgical procedures (World Health Organization, 2016). Blood only can be obtained by donation (Idris & Samuel, 2014). Moreover, the donated blood cannot be stored for a long time. Therefore, regular blood donations are important to maintain blood supply (WHO, 2016).

Approximately 2000 bags of blood supply required daily for those in need due to illnesses such as cancer, thalassemia and hemophilia (Malaymail online, 2015). According to Jalalian *et al.*, (2010), there was 600, 000 Malaysians suffered from thalassemia and needed blood transfusions regularly. In addition, trauma because of motor vehicles accidents (MVA) that has been commonly happening during festive seasons further increases the demand for blood supply (Hiremath, 2012). Almost all states in Malaysia facing blood shortage especially during festival season (Hamid, Basiruddin & Hassan, 2013).

It was reported that in Malaysia, 675,315 blood bags were collected in 2014 (Malay mail online, 2015). However, this number shown that only 2.2% of Malaysian population had donated blood (Malay mail online, 2015). There were several factors to this problem as reported in previous studies. This included natural disasters such as, flood and haze. Numbers of donation also decreased during school holidays and fasting month of Ramadhan (Wooi, Raffeal & Ayob, 2014).

Studies on blood donation were mostly conducted in Western and other Asian countries. Such study, however, is lacking in Malaysia. Moreover, most of the studies had been carried out mostly among university students (Baig *et al.*, 2013; Ngoma *et al.*, 2013; Nigatu & Demissie, 2014; Faqah *et al.*, 2015; Gazibara *et al*., 2015; Papagiannis *et al.*, 2016).

AIM

The general objective of this study was to determine the knowledge, perceptions and barriers of blood donation among adults in Hospital Universiti Sains Malaysia (Hospital USM).

RESEARCH METHODOLOGY

Study design and setting

A cross-sectional research design was employed in this study. This study was conducted among adults who were present around several areas in Hospital USM that includes coffee shop, grocery store and the waiting area for in-patients' relatives.

Population and sampling method

Single proportion formula and G*Power software version 3.1.9.2 were used to calculate the sample size of this study. The participants were conveniently selected among male and female adults who had fulfilled the inclusion criteria, aged between 18 to 65 years old (Pusat Darah Negara, 2016), present in Hospital USM area during the study period, able to understand and speak in Bahasa Malaysia and agreed to participate in the study.

Ethical approval

Ethical approval to conduct this study was sought from the Research Ethics Committees (Human), Universiti Sains Malaysia. Permission to conduct the study was obtained from the Director of Hospital USM. Written consent was obtained from participants after they fully understood the process of the study.

Questionnaire design

The instrument used in this study was a self-administered questionnaire adapted from Baig *et al.*, (2013) with five main sections: Part A, B, C, D and E.

Part A used to obtain socio-demographic data.

Part B consisted of 10 questions to assess the knowledge towards blood donation among adults. Only one correct answer for each question and each correct answer valued one mark. The total marks for all correct answers were 10. The level of knowledge was determined by summing up the correct answers of each individual response. Adequate knowledge was considered for those who scored more than 50 percent of the correct answer (more than 5 marks). While those with less than 50 percent (less than 5 marks), was considered as having inadequate knowledge. Those who scored exactly 5 marks were labeled as having moderate knowledge (Bantayehu, 2015).

Part C contained six questions and used to assess the respondents' perceptions on blood donation.

Part D contained 16 questions and used to gain data on barriers for blood donation was completed by non-donors.

Part E was meant for blood donors only and used to assess motivations to donate blood (7 questions).

Validity and Reliability

The original version of the questionnaire used in this study was in English.

Content validation was done by three experts. A pilot study was conducted on 10 adults prior to the real study to ensure the questionnaire is reliable and understandable by the respondents.

Data Analysis

Data collected was processed by using Statistical Package for Social Science (SPSS) software, version 22.0 for windows. Descriptive and inferential analysis was used to achieve the objectives of the study.

Frequency (f) and percentage (%) were used to determine the knowledge, perceptions, barriers and motivations of respondents on blood donation.

Chi-square test was used to identify the relationships between selected socio-demographics (gender, race and religion) and status of blood donation. Fisher's exact test was used to identify the relationship between level of education and status of blood donation. Independent t-test was used to identify the relationship between age and the status of blood donation.

RESULTS

Overall, 384 adults participated in this study with 100% response rate.

Table 1 shows that the respondents aged between 18 and 63 years, whereby, more than 50% belongs to 18 and 25 years age group. The majority of the respondents (n=320, 83.3%) were female, Malay (n=302, 78.6%) and had tertiary education level (n=206, 53.6%).

With regards to blood donation status, 234 (60.9%) had never donated blood (non-donor) and 150 (39.1%) had some blood donation experiences (donor). Among those with blood donation experience, 47 (31.3%) had been donated once, 24 (16.0%) twice and 79 (52.7%) had donated more than two times (Table 1).

Table 1 Respondents' socio-demographics characteristics (n=384)

Socio-Demographics	Frequency (n)	Percentage (%)
Age		
18-25	**201**	**52.3**
26-45	139	36.2
46-63	44	11.5
Gender		
Male	64	16.7
Female	**320**	**83.3**
Race		
Malay	**302**	**78.6**
Chinese	45	11.7
Indian	19	4.9
Others	18	4.7
Religion		
Islam	**303**	**78.9**
Buddha	38	9.9
Hindu	17	4.4
Others	26	6.8
Level of Education		
Primary school	1	0.3
Secondary school	66	17.2
Diploma/ STPM/ Matriculation	106	27.6
Degree	**206**	**53.6**
Master	4	1.0
PhD	1	0.3
Status of Blood Donation		
Yes (Donor)	150	39.1
No (Non-donor)	**234**	**60.9**

Knowledge towards blood donation

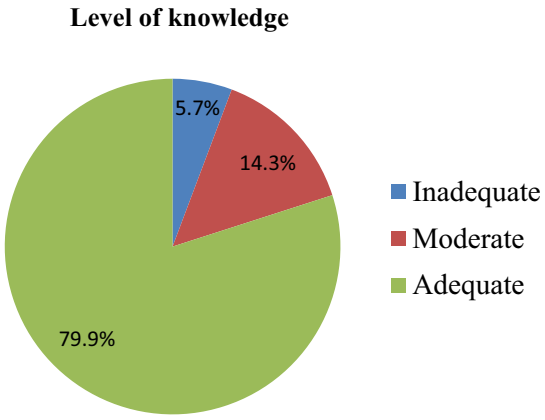

Figure 1: Level of knowledge (n=384)

In terms of knowledge, 307 (79.9%) respondents had adequate knowledge on blood donation (Figure 1).

Table 2 shows in detail the frequency and percentage of each item on the respondents' knowledge towards blood donation. Majority of respondents (n=286, 74.5%) answered the first question wrongly for 'correct age range for blood donation in Malaysia'. More than 50% of respondents also answered question no. 4 'duration of donated red blood cells replacement in donor' wrongly. Majority of them (n=248, 64.6%) also answered wrongly for question no. 6 'how many times can a person donate blood in a year'.

On the contrary, 380 (99.0%) respondents knew that a potential donor should have a stable vital sign (question no. 9) before they donate blood. This is followed by question no. 8 'donors should rest at least 10 minutes after blood donation', and no. 5 'donated blood is screened for AIDS, Hepatitis B & C before transfusion' whereby, 95.3% and 91.9% respondents answered those correctly.

Table 2 Knowledge towards blood donation (n=384)

Items	Correct answer		Incorrect answer	
	n	%	n	%
1. Correct age range for blood donation in Malaysia.	98	25.5	286	74.5
2. Minimum weight of donor.	**240**	**62.5**	144	37.5
3. Amount of blood drawn for each donation.	**198**	**51.6**	186	48.4
4. Duration of donated red blood cells replacement in donor.	183	47.7	201	52.3
5. Donated blood is screened for AIDS, Hepatitis B & C before transfusion.	**353**	**91.9**	31	8.1
6. How many times can a person donate blood in a year?	136	35.4	248	64.6
7. Pregnant woman can donate blood.	**354**	**92.2**	30	7.8
8. Donors should rest at least 10 minutes after blood donation.	**366**	**95.3**	18	4.7
9. A potential donor should have a stable vital sign (blood pressure/temperature /pulse & respiratory rates) before donate blood.	**380**	**99.0**	4	1.0
10. Which blood group can be received by all patients who need blood transfusion?	**334**	**87.0**	50	13.0

Perceptions towards blood donation

There were six questions measured respondents' perceptions towards blood donation. Majority of the respondents had a positive understanding about blood donation when they scored between 85.2% and 97.7% (Table 3). However, a misconception was also indicated in 92 (24.0%) respondents when they thought donor is at risk for infection such as HIV or Hepatitis B & C infection during blood donation.

Table 3 Perceptions towards blood donation (n=384)

Items	Yes		No	
	n	%	n	%
1. Donor has risk for contracting infection like HIV or Hepatitis B & C infection during blood donation.	92	24.0	**292**	**76.0**
2. Donation of blood leads to infertility.	9	2.3	**375**	**97.7**
3. Donation of blood leads to permanent anemia.	32	8.3	**352**	**91.7**
4. Blood donation can leads to death.	19	4.9	**365**	**95.1**
5. Blood donation affects physical strength.	57	14.8	**327**	**85.2**
6. Blood donation is a painful procedure.	48	12.5	**336**	**87.5**

Barriers towards blood donation

Respondents were also asked about the barrier of blood donation. Table 4 shows that there was no significant barrier identified among the respondents as they scored low for all listed barriers (2.1% to 45.3%). Most of the non-donors respondents (n=106, 45.3%) chose 'afraid of the needle prick, pain or discomfort' as the barriers to donate blood.

Table 4 Barriers towards blood donation (n=234)

Items	Yes		No	
	n	%	n	%
1. I have unknown fear.	95	40.6	**139**	**59.4**
2. I do not know where to donate blood.	29	12.4	**205**	**87.6**
3. The collection facility is very far from my living place.	31	13.2	**203**	**86.8**
4. I don't have enough time to donate blood.	75	32.1	**159**	**67.9**
5. I am concerned about sterilization of equipment that used to draw blood.	50	21.4	**184**	**78.6**

6. No one ever asked me for blood donation.	47	20.1	**187**	**79.9**
7. I never thought to donate blood.	64	27.4	**170**	**72.6**
8. I do not have enough information about blood donation campaign.	30	12.8	**204**	**87.2**
9. I believe that there is no need to donate blood.	5	2.1	**229**	**97.9**
10. I am anxious that they would take too much blood.	28	12.0	**206**	**88.0**
11. I am afraid of the sight of blood.	55	23.5	**179**	**76.5**
12. I am afraid of the needle prick, pain or discomfort.	106	45.3	**128**	**54.7**
13. I am not eligible because of medical reasons.	76	32.5	**158**	**67.5**
14. Donation process is long and boring.	29	12.4	**205**	**87.6**
15. My blood may be misused by the blood bank.	12	5.1	**222**	**94.9**
16. No specific reason.	93	39.7	**141**	**60.3**

Motivations towards blood donation

Respondents of the donor group were also asked on motivation for them to donate blood. Some of the reasons for the donor was because they believed that blood donation is a practice or selfless concern for the well-being of others (n=148, 98.7%). It was also based on their intention to help family or friend who are in need (146, 97.3%) and when the time or place for blood donation is convenient (n=142, 94.7%).

Table 5 Motivations towards blood donation (n=150)

Items	Yes		No	
	n	%	n	%
1. I can help family or friend in need.	**146**	**97.3**	4	2.7
2. The time/place for blood donation is convenient.	**142**	**94.7**	8	5.3
3. They give money/ gift.	50	33.3	100	66.7
4. I can learn about AIDS/Hepatitis B&C status.	80	53.3	70	46.7
5. Practice or selfless concer for the well-being of others.	**148**	**98.7**	2	1.3
6. of Religious reasons.	55	36.7	95	63.3
7. No specific reason.	85	56.7	65	43.3

Relationship between selected socio-demographic characteristics and status of blood donation

Table 6 shows that there was a significant relationship between age and status of blood donation (p<0.001) ("Donor" or "Non-donor") among adults in Hospital USM. The mean age was slightly higher in non-donor than donor with a mean difference of 4.54 (95% CI of mean difference: -6.53, -2.54).

Table 6 Relationship between age and status of blood donation (n=384)

Status of blood donation / Variables	Mean (SD)		Mean diff. (95% CI)	t statistic (df)	*p* value
	Donor	Non-donor			
Age	26.64 (8.51)	31.18 (11.34)	-4.54 (-6.53, -2.54)	-4.46 (372.64)	<0.001

In terms of selected socio-demographic characteristics, only level of education had a significant relationship with status of blood donation ("Donor" or "Non-donor") ($p<0.001$), whereas gender, race and religion had not (Table 7).

Table 7 Relationship between selected demographic characteristics and status of blood donation (n=384)

Demographic data	Status of blood donation, n (%)		X^2 (df)
	Donor	Non-donor	
Gender			0.079 (1)
Male	26 (17.3)	38 (16.2)	
Female	124 (82.7)	196 (83.8)	
Race			1.461 (3)
Malay	122 (81.3)	180 (76.9)	
Chinese	16 (10.7)	29 (12.4)	
Indian	7 (4.7)	12 (5.1)	
Others	5 (3.3)	13 (5.6)	
Religion			1.115 (3)
Islam	122 (81.3)	181 (77.4)	
Buddha	14 (9.3)	24 (10.3)	
Hindu	6 (4.0)	11 (4.7)	
Others	8 (5.3)	18 (7.7)	
Level of education			
Primary school	1 (0.7)	0 (0.0)	
Secondary school	12 (8.0)	54 (23.1)	
Diploma/STPM/Matriculation	34 (22.7)	72 (30.8)	
Degree	102 (68.0)	104 (44.4)	
Master	1 (0.7)	3 (1.3)	
PhD	0 (0.0)	1 (0.4)	

[a] Chi-square test
[b] Fisher's Exact test
*p-value less than 0.05 is statistically significant

DISCUSSION

The majority of respondents (60.9%) in this study had never donated blood, which is similar with previous studies (Karim *et al.*, 2012; Amatya, 2013; Jemberu, Esmael & Ahmed, 2016; Jain & Dixit, 2017; Mulatu *et al.*, 2017). However, contrasting finding was indicated in a cross-sectional study conducted in Hong Kong, whereby, 76.1% of the respondents have been blood donors (Hong & Loke, 2011).

The difference in blood donation practice may be due to variances of respondents' awareness levels and attitude towards blood donation as well as different culture or country (Mulatu *et al.*, 2017). As maintaining adequate blood supply is important in every hospital, strategies to increase blood donation among the public are crucial to ensure it is readily prepared for those in needs at any time.

Knowledge towards blood donation

In terms of knowledge, the majority (79.9%) of the respondents in this study had adequate knowledge towards blood donation. This may be reflected on the education level that most of the respondents (54.9%) had a tertiary level of education. According to Jemberu *et al.* (2016) education can positively influence one's knowledge on blood donation. This finding was also similar with a study by Mulatu *et al.* (2017), which reported that among 226 respondents in Ethiopia, 76% had good knowledge towards blood donation. It also showed that, more than 50% of their respondents had at least secondary level of education and above.

Jemberu *et al.*, (2016) further emphasized that, adequate knowledge on blood donation is a pre-requisite to effectively promote voluntary blood donation. Therefore, it is important to disseminate more information about blood donation among those with inadequate knowledge in order to improve their knowledge and practice on blood donation.

Perceptions towards blood donation

In this study, most respondents had misconception about blood donation. They thought that being a donor, it would expose them to infection, for example human immunodeficiency virus (HIV) or Hepatitis B&C during blood donation. Similar scenario was indicated in a Nepalian study that showed up to 76.84% of the respondents had similar misconception about blood

donation (Amatya, 2013). Moreover, most of them (76.84%) also believed that blood donation can lead to anemia (Amatya, 2013).

Although there were differences in the misconceptions on blood donation, the researcher strongly believed that all these misconceptions need to be eliminated first before other actions taken to encourage more blood donation among the population (Baig *et al.*, 2013).

Barriers towards blood donation

The most prevalent barrier towards blood donation among the non-donors respondents in this study was afraid of needle prick, pain or discomfort (n=106, 45.3 %). The same finding was also indicated in other studies (Hong & Loke, 2011; Mishra *et al.*, 2016).

A study carried out in Bangladesh (Karim *et al.*, 2012) reported that, the common barrier to donate blood among the respondents was they were not eligible to donate. This barrier was one of the top five barriers among respondents in this study too. Besides that, the reason almost similar with a study in India where most respondents did not donate blood due to anemia. This caused them not to be eligible as blood donors too (Jain & Dixit, 2017).

In order to remove the barriers on blood donation, health promotion on this issue is the utmost strategy. Advertisements, social networking and other communication channels like counseling and campaigns should be used to promote the practice of blood donation and overcome the public's fear (Jain & Dixit, 2017).

Motivations towards blood donation

In this study, the most common reason for the respondents to become a blood donors was the belief that blood donation is a practice or selfless concern for the well-being of others, or in other words altruism. The same motivation to donate blood was also indicated in Duboz, Macia & Cunéo (2010); Amatya (2013) and Mishra *et al.*, (2016). However, altruism was lower in an Ethiopian study, that majority (45.5%) of them only donated their blood for the relatives or friends as a replacement donor instead of due to altruism (Mulatu *et al.*, 2017), whereas in the current study, 53.3% of respondents had donated their blood because they can learn about AIDS/Hepatitis B&C status.

Although altruism was the top motivation factor to donate blood among blood donors, the numbers of non-donors are higher than the donors. This might be due to lack of effective interventions to promote blood donation among non-donors. Motivating people to donate blood could be difficult, thus, the health care providers should focus more on eliminating the barrier of blood donation, hence increase the number of blood donors (Hong & Loke, 2011).

Selected socio-demographic characteristics including age, gender, race, religion and level of education were tested in this study to identify its relationship with status of blood donation. Of these five characteristics, only age and level of education had significant relationship with status of blood donation, while the rest are not.

Relationship between age and status of blood donation

The findings of this study indicated that there was a significant relationship between age and status of blood donation, where blood donors group were younger than non-donors. The result was consistent with an Iranian study wher they found a significant relationship between age and blood donation (p= 0.021), whereby, the younger age group (15-34 years old) were prone to donate blood compared to another groups (35-65 years old) (Mousavi *et al.*, 2011). This might be due to the fact that younger people were more easily influenced by their friends and more motivated to contribute something for the community, they were more open-minded simply because of their curiosity (Mousavi *et al.*, 2011).

However, different finding was indicated in a study conducted in Saudi Arabia. It was reported that older age group (31-50 years old) was positively associated with the practice of blood donation (p<0.001) (Alfouzan, 2014). Jemberu *et al*. (2016) concluded this might be attributed to the increased in personal experience from donating blood.

Relationship between level of education and status of blood donation

Likewise, a significant relationship was also indicated between level of education and status of blood donation in this study (p<0.001). It revealed that, those with higher education level prone to practice blood

donation. This result was similar to previous studies (Duboz, Macia & Cunéo, 2010; Alfouzan, 2014; Jemberu *et al.*, 2016). This might be due to the fact that education can positively influence the knowledge and attitudes of blood donation (Jemberu *et al.*, 2016).

However, (Gader *et al.*, 2011) rejected this statement when they found education of blood donors and non-donors was not significant (p=0.524) and education had no positive motivating effect towards blood donation in their study. They also emphasized that although education may influence one's attitude towards blood donation, blood donation actually is predominantly a social behaviour (Gader *et al.*, 2011).

CONCLUSION

The findings of this study showed that 60.9% of the respondents had no blood donation experience. However, the majority had good knowledge on blood donation. The most common misconception about blood donation among non-donors was that the donor will be exposed to infection like human immunodeficiency virus (HIV) or Hepatitis B&C during blood donation. 'Afraid of the needle prick, pain or discomfort' were the main barriers among non-donors to donate blood. While the blood donors' motivation to donate blood was influenced by their belief that blood donation is a practice or selfless concern for the well-being of others. Age and level of education had significant relationship with blood donation. It could be assumed that the findings of this study would be a reference to help blood donation centers in developing future policies or strategies to motivate non-donors to become donors or increase the frequency of donation among existing donors.

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