

ORIGINAL ARTICLE

Motivating Factors and Potential Deterrents for Blood Donation among Young Blood Donors in Kelantan, Malaysia

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ABSTRACT

Introduction: Recruitment of potential blood donors from a younger age group is a good effort because they would be in good health and may have a long journey in blood donation. This study evaluated the motivating and deterring factors for donating blood among blood donors, who are students pursuing higher education. **Methods:** This was a cross-sectional study using a set of questionnaires, involving 391 students in Kota Bharu, Kelantan, Malaysia. The research tool was adapted and modified, as well as validated and pilot-tested to ensure its validity and reliability. Data were analysed using the SPSS and Stata software. **Results:** The most highly rated motivating factor for donating blood was to help others and to create a good practice (98%). The motivating factor of being interested in a blood donation campaign was highly rated by female respondents (87%) compared to male respondents (79.1%). The most highly rated deterring factor was the dislike for skipping a class to donate blood (30.9%), which was highly rated as a positive response by female blood donors (35.1%). There was a significant difference between the motivating factors ($p = 0.043$) and the deterring factors ($p = 0.011$), as seen between gender. Items that have the logo of the blood donation centre, such as T-shirts, towels, mugs or bags are rated as the most attractive incentive (87%). **Conclusion:** Altruism was the main reason for young blood donors choosing to donate blood. Social media usage should be considered when promoting blood donation campaigns to this age group.

Keywords: Blood Donors, Motivating Factors, Deterring Factors, Blood Donation

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INTRODUCTION

Blood transfusion is one of the measures that can save a patient's life and improve his or her health. Every country should establish a national health care policy to provide safe and adequate blood supply nationwide (1). A blood transfusion service would include collecting blood from voluntary donors, followed by processing and screening until the blood is supplied to the patients. It is the responsibility of the blood transfusion service (BTS) to provide adequate and safe blood at any time. An effective supply of safe blood depends on a stable base of non-remunerated blood donors. Non-remunerated or voluntary, unpaid blood donors are the safest group of donors because they have the lowest risk of transfusion-transmitted diseases (1). According to the World Health

Organization (WHO) report, Southeast Asian countries have the highest increase of voluntary, non-remunerated blood donations (83%), and more younger people in the low- and middle-income countries tend to donate blood compared to younger people in high-income countries (1).

It is a major challenge to minimise the gap between the demand and supply of blood products. The Malaysian National Blood Centre has identified that almost all states face difficulty in recruiting and retaining blood donors, especially during the festive seasons as Malaysia is a multi-racial country with different festivals. For example, Eid al-Fitr and Eid al-Adha for the Malays; Thaipusam, Wesak Day, and Deepavali for the Indians; the Hungry Ghost Festival, the Mid-Autumn Festival, and Chinese New Year for the Chinese community; and Christmas for the Christians (2).

According to the Department of Statistics, Malaysia, the population is projected to increase from 28.6 million in 2010 to 41.5 million in 2040. However, the annual population growth rate is decreasing from 1.8% in 2010 to an estimated 0.8% in 2040 (3). The population growth rate decreases by 0.05% per year, resulting in a significant increase of the old age percentage. In 2020, Malaysia is expected to experience the ageing population

when the percentage of the population aged 65 years and over reaches 7.2 per cent (3). Ageing population will increase the demand for blood due to higher risks of chronic illnesses and other medical problems that would require surgical intervention (4).

Younger blood donors would be in good health and may have a long career as donors (5). More regular young donors can be recruited by understanding the motivating and deterring factors that can facilitate more targeted recruitment and retention, which could expand the donor pool (5). Demographic information of blood donors are also important for formulating and monitoring recruitment strategies (1). Therefore, this study has focused on association of gender, motivating and deterrent factors of blood donation among younger age group blood donors. The results of this study can be used to better understand the motivating and deterring factors for participating in blood donations among this population.

MATERIALS AND METHODS

This was a cross-sectional study performed using a set of questionnaires in Kota Bharu, Kelantan, Malaysia, involving 391 blood donors. These donors were also higher education students, aged 18–26 years old, who have donated in blood donation campaigns in universities, colleges, and schools conducted by the Transfusion Medicine Unit, Hospital Universiti Sains Malaysia (HUSM). Ethical approval from the Human Research Ethics Committee of Universiti Sains Malaysia (USM), and the Medical Research and Ethics Committee of the Ministry of Health (MREC MOH) were obtained.

Designing and Validating Questionnaire

The set of questionnaires used in this study was adapted from Finck et al., 2016 (6). Adaptation of the questionnaire has received the consent of the author. An expert review meeting was held to discuss the questionnaire and several opinions were taken into consideration for amendments. The questionnaire has undergone the forward and backward translations because it was to be distributed in the English or Malay language based on the respondent's preference. The translation process was assisted by Pusat Bahasa, HUSM. Content validity was conducted via experts' assessment by the Transfusion Medicine Specialists and the Family Medicine Specialist. Face validity was performed during the pilot study in Johor Bahru, Johor involving 30 blood donors among higher education students. The collected data were analysed for reliability using the Cronbach's alpha test. For motivating factors question, Cronbach's alpha value was 0.739. Detering factors question showed Cronbach's alpha of 0.832. However for attractive incentive question, the value was questionable, 0.698.

Data Collection and Analysis

All donors who fulfilled the inclusion criteria were approached to join this study once the blood donation drive was finished. They received a brochure containing brief information regarding this study and donors who were interested to join had approached the researcher for further instructions. The researcher then explained the purpose of this study, the procedures involved, and their rights in this study. Donors who consented to participate in this study were required to sign an informed consent. The distributed questionnaire was self-administered by the donors. Each respondent was instructed to rate the importance of each motivating and deterring factors that have influenced their decision to donate blood. They were also instructed to rate the appeal of the listed incentives. Subsequently, each completed questionnaire was collected and checked by the researcher. Respondents were approached again to complete any missing data in their questionnaires. The response for each question was further categorised for analysis. For questions related to motivating and deterring factors, "strongly agree" and "agree" were categorised as positive responses, while "not sure", "disagree", and "strongly disagree" were categorised as negative responses. For the question of 'likelihood of repeat donation', "very likely" and "probably" were categorised as positive responses. Meanwhile, "not sure", "maybe not", and "not at all" were categorised as negative responses. Data entry and analysis were conducted using the SPSS, version 23.0 and STATA, version 13. The data were analysed using descriptive and inferential analyses. Descriptive analysis was used to analyse the socio-demographic details, and the motivating and deterring factors among blood donors who were also higher education students. Inferential statistics was used to analyse the significant association between gender, and the motivating and deterring factors for donating blood. The association between donation frequency and the likelihood of repeat donation was analysed using the Pearson's chi-squared test. In cases of 33% and 50% of the data having an expected count of less than 5, Fisher's exact test and likelihood ratio were used, respectively. The level of significant was $\alpha < 0.05$.

RESULTS

Socio-demographic Characteristics

The majority of the respondents were female at 67% ($n = 262$), while 33% were male ($n = 129$). The age of these respondents ranged between 18 and 26 years old. The mean age was 20.4 years old, with a standard deviation of 2.0. Most of the respondents were Malay ($n = 361$, 92.3%), followed by Chinese ($n = 14$, 3.6%), and Indian ($n = 13$, 3.3%). The majority of the respondents were studying for their Bachelor's degree ($n = 146$, 37.3%), and have donated either once or 2 to 3 times before ($n = 114$, 29.2%), as shown in Table I.

Table I: Socio-demographic Characteristics of Blood Donors

Variables	Frequency (%)	Mean (SD)
Sex		
Male	129 (33.0)	
Female	262 (67.0)	
Age (Years)		
		20.4 (2.0)
Race		
Malay	361 (92.3)	
Chinese	14 (3.6)	
Indian	13 (3.3)	
Others	3 (8.0)	
Level of education		
STPM	33 (8.4)	
Diploma	62 (15.9)	
Bachelor	146 (37.3)	
Master	8 (2.0)	
Number of previous donation		
None, 1 st time	95 (24.3)	
Once before	114 (29.2)	
2-3 times before	114 (29.2)	
More than 3 times before	68 (17.3)	

Motivating Factors

Most of the respondents responded positively towards the motivating factors, with the exception of item (k), I want the reward/incentive, and item (l), I would feel incomplete/ something missing if I do not donate. The highest positive response was for item (a), to create a good practice/charity/to help others, which accounted for 98% of the responses. Other top motivating factors were item (c), there is a shortage of blood supply nationwide (94.6%) and item (j), I like the comfortable donation environment (89.5%), as shown in Table II.

Table II: Motivating factors for blood donations

Motivating factors	Response	
	Positive n (%)	Negative n (%)
a) To create a good practice / charity / To help others	383 (98.0)	8 (2.0)
b) Donating blood makes me feel like a hero	248 (63.4)	143 (36.6)
c) There is a shortage of blood supply to nationwide	370 (94.6)	21 (5.4)
d) Donating blood is good for my health	331 (84.7)	60 (15.3)
e) I want to donate blood because my friends donated blood	277 (70.8)	114 (29.2)
f) I was inspired to donate blood because lecturers and employees at my university/ college donated blood	233 (59.6)	158 (40.4)
g) Someone in my family is a blood donor	224 (57.3)	167 (42.7)
h) Someone will be proud of me if I donate blood	198 (50.6)	193 (49.4)
i) I am interested in blood donation campaign promoted on social media, flyers, etc.	329 (84.1)	61 (15.6)
j) I like the comfortable donation environment	350 (89.5)	41 (10.5)
k) I want the reward / incentive	133 (34.0)	257 (65.7)
l) I would feel incomplete/ something missing if I do not donate	174 (44.5)	217 (55.5)

Association between Gender and Motivating Factors
Item (i), I am interested in blood donation campaigns promoted on social media, flyers, etc., was rated as an important motivating factor among female blood donors ($p < 0.05$) (Table III).

Table III: Gender and motivating factors

Items	Response	Comparison by gender		
		Male n (%)	Female n (%)	p value
To create a good practice / charity / To help others	Positive	124 (96.1)	259 (98.9)	0.122 *
	Negative	5 (3.9)	3 (1.1)	
Donating blood makes me feel like a hero	Positive	75 (58.1)	173 (66.0)	0.128
	Negative	54 (41.9)	89 (34.0)	
There is a shortage of blood supply to nationwide	Positive	121 (93.8)	249 (95.0)	0.609
	Negative	8 (6.2)	13 (5.0)	
Donating blood is good for my health	Positive	107 (82.9)	224 (85.5)	0.511
	Negative	22 (17.1)	38 (14.5)	
I want to donate blood because my friends donated blood	Positive	93 (72.1)	184 (70.2)	0.703
	Negative	36 (27.9)	78 (29.8)	
I was inspired to donate blood because lecturers and employees at my university/ college donated blood	Positive	85 (65.9)	148 (56.5)	0.075
	Negative	44 (34.1)	114 (43.5)	
Someone in my family is a blood donor	Positive	77 (59.7)	147 (56.1)	0.501
	Negative	52 (40.3)	115 (43.9)	
Someone will be proud of me if I donate blood	Positive	68 (52.7)	130 (49.6)	0.565
	Negative	61 (47.3)	132 (50.4)	
I am interested in blood donation campaign promoted on social media, flyers, etc.	Positive	102 (79.1)	227 (87.0)	0.043
	Negative	27 (20.9)	34 (13.0)	
I like the comfortable donation environment	Positive	113 (87.6)	237 (90.5)	0.385
	Negative	16 (12.4)	25 (9.5)	
I want the reward / incentive	Positive	50 (38.8)	83 (31.8)	0.175
	Negative	79 (61.2)	178 (68.2)	
I would feel incomplete/ something missing if I do not donate	Positive	58 (45.0)	116 (44.3)	0.898
	Negative	71 (55.0)	146 (55.7)	

Pearson Chi-Square test

* Fisher exact test (33.0% have expected count less than 5)

**Likelihood Ratio (50.0% have expected count less than 5)

Level of significant $\alpha = 0.05$

Deterring Factors

The highest positive response of 30.9% for deterring factors was for item (e), I dislike skipping class to donate blood. Other important deterring factors were item (c), I am afraid of blood (9.2%) and item (f), I felt worse after donating blood, which accounted for 8.7% of the respondents. Item (h), incentives are not attractive, was the least chosen deterring factor (Table IV).

Association between Gender and Deterring Factors

Item (e), I dislike skipping class to donate blood, was rated as an important deterring factor among female blood donors ($p < 0.05$), as shown in Table V.

Attractive Incentive

The most rated attractive incentive (87%) was item (c), items that have the logo of the blood donation centre,

Table IV: Deterring factors for blood donation

Deterring factors	Response	
	Positive n (%)	Negative n (%)
Donating blood is painful	32 (8.2)	359 (91.8)
Donating blood is troublesome (eg time and location)	28 (7.2)	368 (92.8)
I am afraid of blood	36 (9.2)	355 (90.8)
Donating blood takes a long time	27 (6.9)	364 (93.1)
I dislike skipping class to donate blood	121 (30.9)	270 (69.1)
I felt worse after donating blood (lightheadedness, nausea, headache, blackouts / fainting, etc.)	34 (8.7)	357 (91.3)
Nurse / Staff is not friendly	12 (3.1)	379 (96.9)
Incentives are not attractive	9 (2.3)	382 (97.7)

Table V: Gender and deterring factors

Items	Responses	Comparison by gender		
		Male n (%)	Female n (%)	p value
Donating blood is painful	Positive	12 (9.3)	20 (7.6)	0.571
	Negative	117 (90.7)	242 (93.4)	
Donating blood is troublesome (eg time and location)	Positive	9 (7.0)	19 (7.3)	0.921
	Negative	120 (93.0)	243 (92.7)	
I am afraid of blood	Positive	9 (7.0)	26 (9.9)	0.410**
	Negative	120 (93.0)	235 (89.7)	
Donating blood takes a long time	Positive	10 (7.8)	17 (6.5)	0.643
	Negative	119 (92.2)	245 (93.5)	
I dislike skipping class to donate blood	Positive	29 (22.5)	92 (35.1)	0.011
	Negative	100 (77.5)	170 (64.9)	
I felt worse after donating blood (lightheadedness, nausea, headache, blackouts / fainting, etc.)	Positive	10 (7.8)	24 (9.2)	0.642
	Negative	119 (92.2)	238 (90.8)	
Nurse / Staff is not friendly	Positive	4 (3.1)	8 (3.1)	>0.05
	Negative	125 (96.9)	254 (96.9)	
Incentives are not attractive	Positive	4 (3.1)	5 (1.9)	0.756**
	Negative	125 (96.9)	256 (98.1)	

Pearson Chi-Square test

* Fisher exact test (33.0% have expected count less than 5)

**Likelihood Ratio (50.0% have expected count less than 5)

Level of significant $\alpha = 0.05$

such as T-shirts, towels, mugs or bags. This was followed by item (b), Biscuits/Titbits/Free snacks after donating, which accounted for 78.5%, and item (f), shopping or food vouchers (74.4%). Item (e), a chance to gain exemptions from attending class, was the least attractive (26.3%) incentive among respondents (Table VI).

Association between Frequency of Donation and Likelihood of Repeat Donation

There was an association between frequency of donation and likelihood of repeat donation among blood donors who were also higher education students ($p < 0.05$). Donors with donation history of more than 2 times were more willing to give positive feedbacks compared to those with lesser donation history (Table VII).

Table VI: Attractive incentives

Attractive incentives	Response	
	Positive n (%)	Negative n (%)
Movie tickets/ Amusement Park ticket / bowling ticket	222 (56.8)	169 (43.2)
Biscuits/ Titbit/ Free snacks after donating	307 (78.5)	84 (21.5)
Items that have a blood donation centre logo such as T-shirts, towels, mugs or bags	340 (87.0)	51 (13.0)
Acknowledgements / credit to total hours of community service performed / merit points	286 (73.1)	104 (26.6)
A chance to gain exemptions from attending class	103 (26.3)	288 (73.7)
Shopping or food vouchers	291 (74.4)	100 (25.6)
Credits for pre-paid mobile phone	259 (66.2)	132 (33.8)

Table VII: Frequency of donation and likelihood of repeat donation

Variables	Likelihood of donation		p value
	Positive n (%)	Negative n (%)	
Number of previous donations			
None	89 (93.7)	6 (6.3)	0.001*
Once	105 (92.1)	9 (7.9)	
2 to 3 times	114 (100.0)	0	
More than 3 times	68 (100.0)	0	

*Fisher Exact Test (50.0% have expected count less than 5)

Level of significant $\alpha = 0.05$

DISCUSSION

This study has shown that altruistic behaviour was the most important motivating factor among young blood donors to donate blood. This result was consistent with previous studies pertaining the motivations of blood donors (5, 6). Prosocial beliefs were the most popular reasons for blood donors among higher education students to donate blood. Prosocial beliefs include altruism and social responsibility (7). This observation showed that even though the young population are experienced with a wide range of technological advances, they still have strong identities and altruistic spirits.

Comfortable donation environment was among the top motivating factors for blood donors among higher education students. A previous study conducted among the people of North India found that most voluntary donors who experienced comfortable donation processes and have a pleasant experience while donating blood were willing to donate again (8). A blood donation centre or a mobile blood donation site should be easily accessible and has a good physical environment (9). These factors should be considered by BTS for their blood donor retention programmes. The young blood donors in this study believed that counselling and health screening during the pre-donation process have indirectly given them information about their current health status. During a blood donation drive, donors will have to undergo several tests, including haemoglobin level, blood group determination, and blood pressure.

Regular donors will have the extra benefit of receiving Hepatitis B vaccination and other blood tests for free. Although health screening is not a popular motivating factor, as reported by other authors (6, 10), it is a good strategy to encourage the young population to donate blood.

Various forms of marketing have been used in this country to educate and encourage blood donation in the community. Such marketing strategies may include direct marketing (face to face, via telephone call, text messages, and mails), mass media (radio and television), social media, and blood drives. Repeat donors are usually more triggered by direct marketing as their donation behaviour, while lapsed donors are more triggered by advertisement (10). Information campaigns that are targeted to the general population should emphasise the importance of blood donation to ensure optimum blood supplies for patients who are in need of transfusion (11).

Peer influence played a major role as 70% of the respondents chose this factor as the reason they decided to donate blood. Influence of friends was a significant factor for young blood donors to donate blood (11, 12). The presence of friends who are blood donors can provide emotional support via actions and words. It was proven that a good peer support will motivate them to donate again (13). Other influences for students to donate blood may also come from family members, and lecturers or employees at their college or university. Adults around them could also become their role models and set a good example that would prompt them to be a blood donor. A majority of the respondents in this study cited that they feel like a hero when donating blood. This particular motivating factor is referred to as an intrinsic motivation, which includes high self-esteem and the desire to increase one's self-acceptance (10). To become a blood donor, individual decision is still the essential component. This observation was agreeable with a previous study that was conducted among high school-aged blood donors. It was found that approximately half of the subjects rated these factors as important factors for them (6).

Rewards or incentives given after a donation were the least favoured motivating factor by the young blood donors in this study, which indicated a positive behaviour among them. Their intention to donate blood was purely altruistic and they did not expect any reward. This is important to ensure they become voluntary and non-remunerated blood donors, as recommended by WHO (1). Gifts or incentives were also the least favourable factor among young blood donors, as reported by Finck et al., in their survey involving 395 school-aged blood donors in the USA (16–19 years old) in four different blood drives (6). However, another author from a university campus in Los Angeles, California reported that this factor was more important to younger donors (18–28 years old) and males (5).

Identifying and understanding any possible deterring factors among students who are blood donors may help the blood transfusion service recruit young new donors and develop several retention strategies. All deterring factors were rated higher as negative responses in this study. Dislike skipping class to donate blood was the most chosen deterring factor, which could be due to their tight class scheduled or clashing of mobile donation time with their classes. Time constraints related to work or studies was the highest percentage of deterrent among other donors as well (11). Lifestyle restriction due to other commitments, such as work and family could prevent donors from donating blood (14). Therefore, mobile collection drives during the weekends may be helpful to overcome this deterrent. Another solution that might be beneficial is to extend the collection hours during a mobile drive until the evening. Thus, students will be able to come and donate after their class is over.

The second important deterring factor was the fear of blood. A meta-analysis study defined the fear of blood as a fear related to seeing blood and disliking the sight of blood (10). The author also reported that 8% of the respondents were afraid of blood (10), which was the same result obtained by the current study. Fear of blood and needles may prevent a youngster from becoming a blood donor and subsequently, a regular donor. It would be good to form an educational team and cooperate with primary caregivers to give children an early education to reduce their anxiety towards blood and needles. This measure may prevent their fear and anxiety from persisting during their adolescence and later in life. Sharing of experiences by repeat donors may also be helpful to reduce this deterring factor (15).

Some of the respondents in this study cited that they felt worse after donating blood. For example, they began to experience lightheadedness, dizziness or nausea. This deterring factor was the third most chosen factor by the respondents. This finding is similar with a previous study that concluded that approximately 9% of the respondents rated feeling worse after donating as an important deterring factor (6). The aim of a donor retention programme is to maintain a donor's willingness to donate blood regularly by offering motivation (16). A donor's feeling during or after donating blood, whether it was pleasant or otherwise, was significantly associated with a higher return behaviour (17). Donors who did not experience any adverse reaction have a higher return rate for another donation within one year compared to donors who have vasovagal reactions (18). Some intervention measures can be taken to reduce and prevent these adverse donor reactions, for example, applied muscle tension technique and increasing fluid intake before donation (19).

Donating blood was painful was reported as one of the deterring factors for blood donation in this study. However, other studies reported higher percentages

of this factor (10, 6). This might be because a majority of the respondents (58%) were new donors. Pain associated with donating blood was the most commonly rated potential deterrent in studies conducted among young blood donors (5, 6). Pain and discomfort during the donation process were usually associated with needles. Some of them were actually afraid of needle and perceived it as pain (10). Phlebotomy may lead to fear and anxiety among young blood donors. This is because they have less experience with medical interventions and venipunctures compared to older blood donors. Therefore, a phlebotomist should be aware of this deterring factor and address a donor's anxiety accordingly. Explanation and reassurance by medical personnel might alleviate needle-associated anxiety. Local anaesthesia should be given to reduce pain and the donor's attention should be attracted away from the venesection process.

Another deterring factor, as rated by the respondents, was that donating blood is troublesome, in terms of time and location. This could be because the mobile donation drive was held far from their classes or hostels and the opening hours of the blood donation campaign were inconvenient for them. Hence, it is essential to ensure adequate staffs are available and to review the workflow and shorten the donation time. However, only a few respondents rated unfriendly nurses and staff members as their deterring factor for donating blood. This indicates that mobile team staffs have good social and soft skills in attending to blood donors. In contrast, this factor was rated higher in other studies (5, 6). The least deterring factor was unattractive incentives given. This finding is in line with a previous study that reported unappealing incentives as the least important deterrent rated by university-going blood donors (5). It was a good indicator to keep these youngsters as voluntary and non-remunerated blood donors. In this current study, items, such as T-shirts, towels, mugs or bags that have the logo of the blood donation centre, were rated as the most attractive incentive by donors, followed by free biscuits or snacks, and shopping or food vouchers. Previous studies showed that movie tickets were rated as the most appealing incentive by blood donors (5, 6). However, in this current study, this type of incentive was not so appealing, which might be due to the difference in social background. Furthermore, there were a limited number of amusement centres and cinema within the study site.

These young blood donors were keener for appreciation type of incentives, such as items with the blood donation centre's logo that they can keep as a memory. Concrete items were more popular and more appealing among young blood donors. This result was consistent with past reports of younger age groups (5, 6). However, the non-material rewards proposed in this study still received quite a high rate by the respondents. The rewards were in the form of acknowledgement/merit points/credit to total hours of community services. Many students were

interested in this type of incentives because they can indirectly establish their co-curricular and improve their achievements. In contrast with other studies, non-material rewards were still less popular among the young blood donors (5, 6). These findings suggested that rewards or incentives could be used in recruitment strategies targeting young blood donors. Recruitment will be more successful if rewards are given based on the background and preferences of the local population. Although blood donation should be a non-remunerated process, giving out incentives should not be a problem to increase these young blood donors' motivation and give them an enjoyable experience.

Both male and female blood donors rated to create a good practice/charity/to help others and the shortage of blood nationwide as the most important factors for them to donate blood. These findings were cited as the highest motivating factors for both male and female donors in previous studies (5, 6). Both of these factors were rated higher by female blood donors compared to males, yet no significant association was identified between gender and these motivating factors in this study. An earlier study cited that females with previous blood donation experience were independent predictors of positive attitude towards blood donation to an anonymous person (20). A study among Canadian students has also shown that women were more likely to be motivated by altruistic behaviour (21). Another study reported that male blood donors were more motivated by the idea of donating blood as the right thing to do (6).

Female blood donors were significantly motivated by their interest in the blood donation campaign. Therefore, blood donation campaigns should incorporate various methods, such as social media, flyers, and exhibitions when targeting college or university blood drives with a majority of female students. The male donors were more influenced by their friends, family members, and lecturers to donate blood. However, these motivating factors have non-significant association. In contrast with a study among high school-aged blood donors, friends who are donating was a significant motivating factor for male students (6). In comparison with another study, female blood donors were more influenced by their family and friends (21).

For this study, male donors have also rated higher for incentives. However, it was not a significant motivating factor for them. In terms of the deterring factor for blood donors among higher education students, skipping class to donate blood was chosen frequently by both male and female donors. However, female blood donors were more likely to rate dislike skipping class as an important deterring factor compared to male donors. There was a significant association between gender and this deterring factor. Previous studies reported donating blood taking too much time and unattractive incentives as significant deterring factors for young male donors

(5, 6). No significant association was found between gender and this deterring factor in this study. This observation indicated that the mobile blood drive team was very efficient in handling donors during the entire donation process. Therefore, time consumed during blood donation was not a major problem for their blood donors.

The second highest deterring factors were donating blood is painful as rated by male donors and fear of blood as rated by female donors. Even so, no association was found between gender and these deterrents. Finck et al. (2016) reported that donating blood is painful was cited as the highest by both male and female donors (6). Another study showed that male donors rated inconvenient hours offered by donation centres as their worst deterrent. Meanwhile, female donors rated donation process taking too long as their deterring factor (5). There was an association between the number of previous donations and the likelihood of repeat donation among blood donors who were higher education students. Those with donations history of more than two times were more likely to give positive feedbacks compared to those with lesser donation history. Therefore, a good promotion and campaign by the procurement team may help to recruit new donors. These new donors should receive continuous education and information to encourage them to donate again. The experience gained during their first blood donation drive will give them the confidence to donate again in the future. An earlier study showed that the number of blood donations participated by a new donor in the first year of their donation career can be associated with the long-term retention of the donor. The more frequently they donated in their first year, the more likely for them to become regular donors (22). In contrast, a study reported that the regularity of blood donation was not influenced by the donors' intention to donate again in the future. Most blood donors with a previous history of blood donation have the intention to donate again (23). Individuals with past blood donation experience showed higher attitude towards donating blood compared to individuals who have never donated (24). Most blood donors responded that they will donate again and described donating blood as a good experience. Hence, they will encourage their friends to be blood donors too (24). However, a study among university students reported that a majority of them were willing to donate blood in the future, even though they have never donated before (25).

The research tool has a limited content because it only included the attitude of the respondents or behavioural items. Therefore, the knowledge and practice of these higher education students as blood donors were not assessed. Only blood donors were approached to join this survey. Hence, this study did not assess the motivating and deterring factors for donating blood among non-blood donors.

CONCLUSION

This study has concluded that young blood donors in Kota Bharu, Kelantan have good intentions with regards to blood donation. More blood donation campaigns should be conducted via social media as young blood donors are more influenced by internet technology. Small tokens of appreciation that feature the blood centre's logo should be considered for this age group. Blood transfusion service providers are advised to cooperate with the various higher learning institutions to hold mobile blood donation drives during the weekends or within a specific allocated time during weekdays so as not to interfere with their classes. Suggested time for blood donation is during semester break or after the examination week where students would have flexible time and not restricted by their tight schedule.

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