

Original Research Article

Factors influencing blood donation practices among students of private universities in Thika Town, Kiambu County, Kenya

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ABSTRACT

Background: In spite of extensive efforts on blood donation programs conducted worldwide, the availability of adequate blood supply continues to be a demanding challenge in developing countries, including Kenya. This study was conducted with the objective to assess factors influencing voluntary blood donation practices among students of private universities in Thika town, Kiambu County, Kenya.

Methods: This cross-sectional study using both qualitative and quantitative methods was conducted at Mount Kenya University and Greetsa University. Multi-stage sampling was used to select 385 students from the two universities. Questionnaire was used in gathering information from students. The Pearson chi-square analysis and p value < 0.05 were found statistically significant. Logistic regressions analysis was used to predict factors influencing blood donation.

Results: The study found that knowledge and the time respondents received information on blood donation in university were predictive factors influencing blood donation. The study also found that 57.1% of the respondents received information on blood donation from high school. In addition, 60% of the students were identified as having no blood donation history. Respondent major reasons for not donating blood were not asked to donate (44.3%), lack of information (28.5%), and fear of needles (23.2%). Some of the donors identified negative effects of post-blood donation such as dizziness, tiredness, and feeling weak.

Conclusions: The study concludes that not asking students to donate and lack of timely information on blood donation were the main reasons for low blood donation practices among students in private universities in Thika Town, Kiambu County, Kenya.

Keywords: Attitude, Blood donation, Effects on donors, Knowledge, University students

INTRODUCTION

In spite of extensive efforts on blood donation programs conducted worldwide, the availability of adequate blood supply continues to be a demanding challenge in developing countries.¹ The gathering of blood from voluntary blood donors, most notably among university students is a significant effort for ensuring not only the availability of blood but also the safety of the entire blood transfusion process.² Globally, about 112.5 million blood

donations are collected annually. Of this amount, 50 percent are collected in high-income countries which represent 19% of the world's population. In low-income countries, children under the age of 5 years take up to 65 percent of the total transfusions.³ Blood serves as a basic component to a country's ability to offer medical services to patients, yet it remains with huge challenges among countries that are developing.⁴ According to Kenya National Blood Transfusion Services (KNBTS), two blood units out of every three are transfused to either

pregnant women or children. Additionally, about seven Kenyans require blood every 10 minutes and are at risk of dying if not provided.⁵ In 2014, KNBTS collected only 189,000 blood units, comprising 47.25% of the annual national blood requirement.⁶ Kenya needs to double her efforts to reach the WHO recommendation of 1% of the nation's whole populace. Currently, Kenya is experiencing an ever-increasing demand for transfusions of blood. It is important to note that nearly 60% of the blood collected is transfused to mothers and children.⁵ Moreover, the demand for blood products is on the increase due to sporadic terrorist attacks, injuries to road traffic, cancer and malaria-related anemia, and other medical conditions.⁷ While the demand has increased, the supply of blood in Kenya has diminished. An investigation among health science students at the University of Nairobi revealed that about 53% of the students have never donated blood.⁸ Moreover, in the 2018 year-end report, the KNBTS Thika satellite station collected a total of 9,467 units of blood from various sources. Students in tertiary institutions in Thika town accounted for only 948 (10%). The study sought to assess factors such as knowledge, information dissemination, and attitude and effects either positive or negative on blood donors that are influencing voluntary blood donation practices among students of Mount Kenya University and Greta University, Kenya. The outcome is to assist the Kenyan government plan blood donations amongst youthful individuals in the Country. It also will help the nation to enhance its blood donation planning and policy development.

METHODS

Research design and target population

The research was a cross-sectional descriptive study using both qualitative and quantitative methods that were carried out from February to June 2019 in Thika town, Kiambu County, Kenya. The target population of the study comprised of bachelor's health science and non-health science students of Mount Kenya University and Greta University between the ages of 18 and 36 years who had completed at least one semester.

The sample size was selected at 95% confidence interval and 50% prevalence were determined using the Fisher et al (1998) equation because the correct number of students donating blood in tertiary institutions in Thika Town is uncertain.⁹

$$n = Z^2 \frac{pq}{d^2}$$

n=Minimum sample size required,
Z=Standard normal deviation corresponding to the confidence interval of 95 percent (1.96),
p=Assumed percentage of the blood donor population (this is not known as 50 percent).
q=1.0-p,
d=Absolute precision (5%).

$$\text{Therefore, } n = (1.96)^2 \times 0.5 (1 - 0.5) / (0.05)^2 = 385$$

Sampling technique

A multistage sampling technique was employed in selecting the participants for this study.

Selection of participants from Mount Kenya University

Stage 1: simple random sampling

The College of Health Sciences comprised of five schools which consist of fourteen bachelor programs. Simple random sampling method was used in selecting seven bachelor's programs out of fourteen.

Stage 2: stratified random sampling

Stratified random sampling technique was used to select regular bachelor's health science students from the seven programs which are as follows; Bachelors of medicine and surgery, Bachelors of Science in Nutrition, Bachelors of Science in Community Health, Bachelors of Science in clinical medicine, Bachelors of Science in Health Records, Bachelors of Pharmacy and Bachelors of Science in Nursing. The selections of participating respondents were made by selecting respondents based on their year of study (first year, second year, third year, fourth-year, & fifth year), using the class list that was obtained from the registrar's office.

Stage 3: proportionate size sampling

Lastly, the researcher used proportionate size sampling to get the total number of participants enrolled in each department.

Selection of participants from Greta University

In the other institution (Greta University), due to the challenges of obtaining the student's enrollment list from the registrar's office, the researcher worked with student class representatives to select respondents. Respondents were selected to participate in the study after the introduction of the study objectives. When the amounts (percent) of respondents were reached in a specific school, there was no further distribution of the questionnaires.

Selection of FGDs and KII participants

For qualitative data, a purposive sampling technique was used to select focus group discussions (FGDs) and key informant interviews (KII) participants. The researcher likewise trained two research assistants on understanding the importance of each objective and research ethics. The research assistants were in charge of the distribution and administration of the questionnaires to students. All questionnaires were serialized using a unique number per respondent to facilitate the validation and accountability process.

Data collection tools

Tools for data collection consisted of questionnaires, a discussion guide for focus groups, and an interview guide for key informants. In order to check the ranking of different attributes, the questionnaire had closed-ended questions and this helped to lower the number of responses. The questionnaire had five sections; socio-demographic characteristics, information dissemination, knowledge, attitude, and effects of blood donation on donors.

Statistical analysis

Data gathered from the study were entered into a Microsoft Excel spreadsheet and double-checked for accuracy. Data was then exported into SPSS software version 22 for data cleaning and analysis. Categorical variables were shown in frequencies and percentages for descriptive analysis. The Pearson chi-square analysis and p value <0.05 were found statistically significant. The logistic regression model incorporated all of the exposure variables (independent factors), which were statistically significant with the dependent variable at the bivariate level. Adjusted odds ratio (AOR) with their corresponding 95% confidence interval (CI) was used to measure the magnitude of the relationship between the retained independent variables and the dependent variable. Qualitative data was analyzed from the transcripts from the FGD and KII sessions. The recorded audiotapes were listened to several times, transcribed, and then interpreted independently. Emerging themes were coded to give the overall views of the respondents regarding the various facets of blood donation practices. This qualitative information was essential for the triangulation of the quantitative data that was collected.

Ethical considerations

This study involved human subjects; thus, ethical consideration was highly considered. Ethical review and approval for the study were obtained from Mount Kenya University's ethical and Research Committee and the school of Postgraduate studies (MKU) before the inception of the study. The researcher also sought for a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and a letter of authorization from MoH-KNBTS. Written and verbal consent was obtained from each study participant before enrolment into the study. The participation was voluntary, and confidentiality was observed at all times during and after the data collection.

RESULTS

Socio-demographic characteristics of the respondents.

The study was conducted among 385 participants from both Mount Kenya University and Greta University. Slightly over half of the respondents (56.4%) were Health Science Students representing Mount Kenya University

whereas (43.6%) were Non-Health Science Students representing Greta University. Most of the respondents (74.3%) were between age 18-23 years with a small proportion (3.6%) aged 30 years or more. Slightly over half (55.1%) were males compared to females (44.9%). A higher proportion of the respondents (87.3%) were Christian, and 12.2% were Muslim, while most (87.8%) were single, and only 10.4% were married. Of the total respondents, 29.4% live in rural areas whereas 70.6% live in urban areas as seen in (Table 1).

Table 1: Socio-demographic characteristics of the respondents (n=385).

Variables	Frequency	%	
Age (in years)	18-23	286	74.3
	24-29	85	22.1
	30-36	14	3.6
Gender	Male	212	55.1
	Female	173	44.9
Religion	Christian	336	87.3
	Muslim	47	12.2
	Other	2	0.5
Marital status	Single	338	87.8
	Married	40	10.4
	Other	7	1.8
Residence	Rural	113	29.4
	Urban	272	70.6
Types of college	Health science	217	56.4
	Non-health science	168	43.6
Year of study	I	91	23.6
	II	90	23.4
	III	91	23.6
	IV	94	24.4
	V	19	4.9
Bachelor programs	MBChB	36	9.4
	B.pharm	62	16.1
	Nursing	36	9.4
	Clinical medicine	28	7.3
	Nutrition	11	2.9
	Health records	30	7.8
	Community health	14	3.6
	Commerce	42	10.9
	Computer science	42	10.9
	Hospitality and tourism	42	10.9
Community development	42	10.9	

Knowledge of blood donation among respondents

More than half of the respondents (59.0%) knew the minimum weight (50 per kg) required to donate blood.

Only 39.7% knew the minimum age (16 years) to donate blood in Kenya. Furthermore, the majority of 61.3% did not know the level of hemoglobin needed, and units of blood a healthy person can donate at a time. A higher proportion of the respondents, 87.8% know that blood cannot be manufactured artificially.

Table 2: Knowledge of blood donation among respondents (n=385).

Knowledge of blood donation among respondents		Frequency	%
Minimum age to donate blood in Kenya	Correct response	153	39.7
	Incorrect response	123	32
	Don't know	109	28.3
Required hemoglobin level to donate blood	Correct response	69	17.9
	Incorrect response	80	20.8
	Don't know	236	61.3
Units of blood healthy person donate at a time	Correct response	27	7
	Incorrect response	122	31.7
	Don't know	236	61.3
Minimum weight required to donate blood	Correct response	227	59
	Incorrect response	49	12.8
	Don't know	109	28.3
Can blood be artificially manufactured?	Yes	47	12.2
	No	338	87.8
How often can an individual donate	Correct response	192	49.9
	Incorrect response	71	18.4
	Don't know	122	31.7
Know own blood group	Yes	228	59.2
	No	157	40.8
If yes, what is your blood group	A+	29	12.7
	A-	13	5.7
	AB+	27	11.8
	AB-	12	5.3
	B+	44	19.3
	B-	4	1.8
	O+	84	36.8
O-	15	6.6	

Table 3: Attitude towards blood donation amongst respondents.

Attitude towards blood donation amongst respondents		Health science student		Non-health science student	
		N	%	N	%
Can one contract a disease while donating blood	Strongly agree	67	56.8	51	43.2
	Agree	96	79.3	25	20.7
	Strongly disagree	25	36.2	44	63.8
	Disagree	29	37.7	48	62.3
Blood donation is safe	Strongly agree	74	50.3	73	49.7
	Agree	119	59.5	81	40.5
	Strongly disagree	4	36.4	7	63.6
	Disagree	20	74.1	7	25.9
Donating blood save people's lives	Strongly agree	186	58.5	132	41.5
	Agree	29	46.8	33	53.2
	Strongly disagree	2	50	2	50
	Disagree	0	0	1	100
Blood donation should be encouraged	Strongly agree	160	58	116	42
	Agree	53	52	49	48
	Strongly disagree	3	50	3	50
	Disagree	1	100	0	0
Blood donation is very painful	Strongly agree	14	31.8	30	68.2
	Agree	37	61.7	23	38.3
	Strongly disagree	54	57.4	40	42.6
	Disagree	112	59.9	75	40.1
Next six months, intend to donate	Strongly agree	42	42	58	58
	Agree	107	59.8	72	40.2
	Strongly disagree	20	69	9	31
	Disagree	48	62.3	29	37.7
I don't think about donating blood	Strongly agree	34	40	51	60
	Agree	83	60.1	55	39.9
	Strongly disagree	35	61.4	22	38.6
	Disagree	65	61.9	40	38.1
If I can give blood in the next six months, I will be very happy	Strongly agree	73	51	70	49
	Agree	111	60.3	73	39.7
	Strongly disagree	12	54.5	10	45.5
	Disagree	21	58.3	15	41.7

More than half (59.2%) know their blood group, whereas only 49.9% knew how often an individual could donate. The most recurrent blood group found in our study was O+, which accounted for 84 (36.8%), as seen in (Table 2).

Attitude towards blood donation amongst respondents

Slightly over half (58.5%) of the health science students strongly agreed that donating blood saves people's lives compared to (41.5%) of the non-health science students. Most of the health science students (56.8%) agreed that one can contract disease while donating blood compared to 43.2% of non-health science students. Over half of the health science students (58.0%) strongly agreed that blood donation should be encouraged compared to 42.0% of the non-health science students. Higher proportion (60.3%) of the health science students and less than half 39.7% of the non-health science students agreed that if they are able to donate blood in the next six months, they will be so happy, however, 60.1% of the health science and non-health science students (39.9%) agreed that blood donation is something that they rarely think about as seen in (Table 3).

Association between socio-demographic variables, Knowledge, Attitude, and Information dissemination on blood donation

The findings from this study reveals that age (p value=0.011) and types of college (p value=0.031) were statistically significant but not significant with gender,

year of study, bachelor program, residence, religion, and marital status. This study also showed that knowledge level (p value=0.000) was statistically significant with donation practice.

Furthermore, bivariate analysis was carried out to check whether there exists any statistically significant association between respondent's attitude towards blood donation and donation practice. Attitude (p value=0.421) was not statistically significant with donation practice. In addition, bivariate analysis was carried out to check whether there exists any statistically significant association between information dissemination among respondents and donation practice. Respondents who have heard about blood donation (p value=0.001), last time received information on blood donation in university (p value=0.007), more likely to donate blood if receive information (p value=0.000), willing to receive information on blood donation (p value=0.000) were statistically significant with donation practice as seen in Table 4.

Overall knowledge and attitude among respondents on blood donation

The overall knowledge of blood donation was measured on seven questions. The correct response for each question was assigned '1' mark, and an incorrect response was assigned '0' mark. The scores were added up to give the total marks scored by respondents on knowledge of blood donation.

Table 4: Association between socio-demographic variables, knowledge, attitude, and information dissemination on blood donation.

Socio-demographic variables	Donors		Non-donors		Chi-square x ²	P value	
	N	%	N	%			
Age (in years)	18-23	93	24.2	193	50.1	9.101	0.011*
	24-29	38	9.9	47	12.2		
	30-36	9	2.3	5	1.3		
Types of College	Health science	89	23.1	128	33.2	4.647	0.033*
	Non- health	51	13.2	117	30.4		
Knowledge Level	Poor	26	20	104	80	46.223	0.000*
	Average	73	36.9	125	63.1		
	Good	41	71.9	16	28.1		
Attitude	Favourable	123	37.2	208	62.8	0.647	0.421
	Unfavourable	17	31.5	37	68.5		
Heard about blood donation	Yes	139	38.6	221	61.4	12.102	0.001
	No	1	4	24	96		
Last time received information in university	1year ago	30	40	45	60	12.164	0.007
	2-3 years	6	30	14	70		
	6 months ago	64	45.7	76	54.3		
	Never	40	26.7	110	73.3		
Are you likely to donate blood when receive information?	Yes	129	40.8	187	59.2	15.151	0.000*
	No	11	7.9	58	23.7		
Willing to receive information on blood donation	Yes	137	39	214	61	12.223	0.000*
	No	3	8.8	31	91.2		

*Statistically highly significant at p<0.05

Table 5: Overall knowledge and attitudes among respondents.

Response	Health science student		Non-health science student		Total (n=385) N (%)
	N	%	N	%	
Knowledge					
Good	45	11.7	12	3.1	57 (14.8)
Average	114	29.6	84	21.8	198 (51.4)
Poor	58	15.1	72	18.7	130 (33.8)
Attitude					
Unfavorable	37	17.1	17	10.1	54 (14.0)
Favorable	180	82.9	151	89.9	331 (86.0)

Table 6: Information dissemination among respondents and donation practice.

Responses		%
Heard about blood donation?	Yes	93.5
	No	6.5
Willingness to receive information on blood donation	Yes	91.2
	No	8.8
More likely to donate if knew more information on blood donation	Yes	82.9
	No	17.1
Blood donation practices among respondents	Donors	36.4
	Non-donor	63.6
Main reasons for donating blood among respondents*	Voluntary basis	67.9
	Kindness	24.3
	For friend/relatives	9.3
	Advertisement	2.9
	To know HIV status	2.1
Main reason for never donating blood*	Not asked to donate	44.3
	Lack of information	28.5
	Fear of needle	23.2
	Lack of donation facility	19.9
	Contracting a disease	17.4
Preferred channel blood donation should be delivered*	Mass media(TV, Radio)	44.3
	Social Media	43.7
	SMS	10.6
	Telephone	7.8
	Email	6.3

*Multiple responses

Respondents who scored four were considered as having average or satisfactory knowledge, and those with scores 2 and 7 were considered as having poor and good knowledge, respectively. Thus, 198 (51%) have an average or adequate knowledge, and this is slightly half of the population. 130 (34%) of the respondents cited to have poor knowledge of blood donation. Only 57 (15%) indicated to have good knowledge of blood donations. The overall attitude towards blood donation among respondents was measured using the Likert scales ranging from strongly agree to disagree. The positive response for each question was assigned '1' mark, and a negative response was assigned '0' mark. The scores were added up to give the total marks scored favorable or unfavorable. In terms of proportion, the favorable attitude among both the non-health science students and the health science students accounted for 89.9% and 82.9%, respectively. The unfavorable attitudes among both the health and non-health science students were 17.1% and 10.1%, respectively. Hence, the overall favorable attitude among both students accounted for 86%, while the unfavorable attitude accounted for 14%, as seen in Table 5.

Table 7: Number of times donors had donated blood, place of the last donation and positive and negative effects on donors (n=140).

Responses to questions	N	%
In a lifetime		
Once	70	50
2-3 times	42	30
More than 3times	28	20
Last time donated		
One year ago	39	27.9
1-6 months back	22	15.7
Two years ago	15	10.7
Over two years	64	45.7
Place of the last donation		
Blood transfusion center	22	15.7
Hospital	30	21.4
High school	57	40.7
University campus	29	20.7
Other	2	1.4
Positive or negative effects on donors*		
Satisfied	66	47.5
Dizzy	35	25.2
Tired or fatigue	24	17.3
Weak	19	13.7
Underweight	5	3.6

*Multiple responses

Information dissemination among respondents and donation practice

Majorities (93.5%) of respondents have heard about blood donation. Furthermore, 351 (91.2%), are indeed willing to receive information on blood donation. The only portion that indicated to be unwilling is 8.8% of the sample in this study. Most of the participants 319 (82.9%)

mentioned “yes” that if they knew more about blood donation, they are more likely to donate blood compared to only 66 (17.1%) of the participants who mentioned “no”. Out of the 385 respondents, less than half 140 (36.4%) of the respondents had donated blood.

More than half 67.9% of donors mentioned voluntary basis as the main motivation for donating blood. However, over half (63.6%) of respondents have never donated blood either because they have not been asked to donate (44.3%), lacked information 28.5%. Other reasons included fear of needles, lack of donation facility, and fear of contracting a disease. Less than half 44.3% of respondents mentioned mass media (TV, radio) as their preferred channel through which information on blood donation should be delivered. Moreover, 43.7% mentioned social media as their second preferred channel through which information on blood donation should be

delivered as seen in Table 6. According to a key informant, he made a recommendation that the university should engage students through the social media platform.

“I think they (universities) can engage students through notice or bulletin board, students’ social platforms like WhatsApp and Facebook” (Key informant 1).

Sources of information on blood donation among respondents

Slightly over half (57.1%) mentioned high school as their source of information, 20.1% mentioned Kenya Red Cross Society, 18.4% mentioned hospital, 17.8% mentioned social media and 17.5% of students mentioned University while the least was church announcement which accounted for only 3.6% as seen in Figure 1.

Table 8: Factors predicting blood donation practices.

Factors	95.0% CI				
	AOR	Lower	Upper	P value	
Age (in years)	18-23	0.307	0.086	1.094	0.069
	24-29	0.649	0.175	2.413	0.519
	30-36	Ref			
Types of college	Health science	1.167	0.248	5.486	0.845
	Non- health	Ref			
Bachelors program	Commerce	0.674	0.242	1.875	0.45
	Development	0.841	0.313	2.264	0.732
	Hospitality	0.35	0.113	1.082	0.068
	Medicine	0.453	0.092	2.228	0.33
	Nursing	0.676	0.142	3.221	0.623
	Pharmacy	0.373	0.082	1.707	0.204
	Clinical medicine	0.486	0.098	2.409	0.377
	Com. health	0.278	0.044	1.763	0.174
	Health records	0.271	0.053	1.387	0.117
	Nutrition	Ref			
Year of study	First year	2.413	0.663	8.789	0.182
	Second year	1.585	0.438	5.733	0.482
	Third year	1.391	0.39	4.966	0.611
	Forth year	1.272	0.373	4.339	0.701
	Fifth-year	Ref			
Heard about blood donation	Yes	0.161	0.018	1.441	0.102
	No	Ref			
Willingness to receive information	Yes	0.469	0.097	2.267	0.346
	No	Ref			
Last time received information in University	1 year ago	1.719	0.838	3.525	0.14
	2-3 years	1.533	0.478	4.91	0.472
	6 months ago	2.023	1.09	3.753	0.025*
	Never	Ref			
More likely to donate blood if receive information	Yes	0.621	0.253	1.525	0.299
	No	Ref			
Knowledge level	Average	2.147	1.22	3.779	0.008*
	Good	9.585	4.263	21.551	0.000*
	Poor	Ref			

*Statistically highly significant at $p < 0.05$.

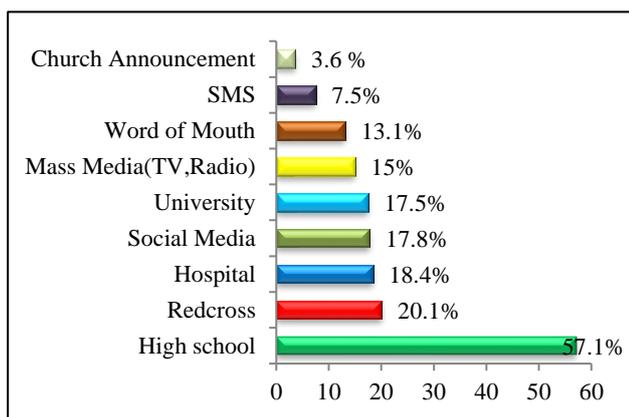


Figure 1: Source of information among respondents. multiple responses.

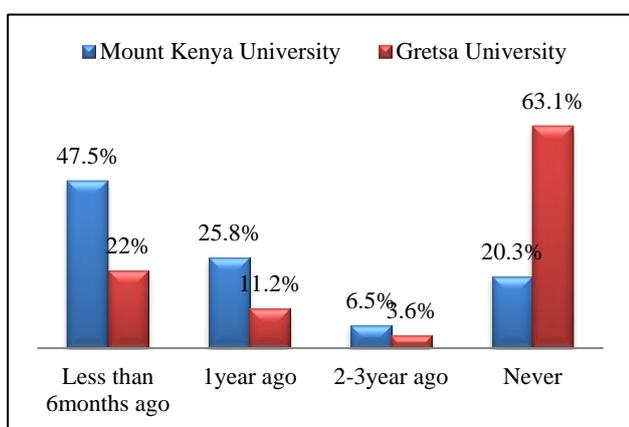


Figure 2: Respondents last time to receive information in university.

Last time to received information amongst participants in University

Less than half 47.5% of Health science students mentioned the last time they received information on blood donation in their University was less than 6 months from the date of the interview while over half of the non-health science students 63.1% mentioned that they have never received information on blood donation in their University as seen in Figure 2.

It is also worth mentioning that a higher proportion (63.1%) of the respondents from Gretsia University mentioned that they have never received any information on blood donation from partners who are involved in blood donation activities before the study. This is concurrent with the key informant interviews where a key informant stated that his institution has never been at Gretsia University.

“At the universities within Thika, we only conduct blood donation drive at MKU. We are talking of MKU because we have never been to Gretsia University. So at MKU, we normally do it at most twice in a year.” (Key Informant 3)

Number of times donors had donated blood, place of the last donation, and positive and negative effects on donors

Half of the students, 50%, had donated blood once in a lifetime, whereas 30% donating 2-3 times. Considering the last time donated, 45.7% donated blood over two years, with only 27.9% donating blood one year ago. Majority 40.7% of donors mentioned high school as the last place of donation, whereas 21.4% of donors mentioned hospital, 20.7% of donors mentioned university, while only 15.7% of donors mentioned the blood transfusion center as their place of the last donation. In addition, respondents (donors) in this study indicated the different effects experienced after donating blood. Among them, 66 (47.5%) of them indicated that they felt satisfied after donating blood. Only 5 (3.6%) respondents indicated to have felt underweight after donating blood. Moreover, 24 (17.3%) indeed expressed feeling tired/fatigue after the donation of blood. Concerning feeling weak, only 19 (13.7%) felt weak after donating blood, and 35 (25.2%) of respondents in this study indeed felt dizzy after donating blood as seen in Table 7.

Factors predicting blood donation practices among respondents

A multivariate analysis was performed to classify independent blood donation predictors. Only two (2) factors in the final model were retained after nine (9) variables that showed significant correlations at $p < 0.05$ in bivariate analysis. The study also revealed that respondents who received information in University less than 6 months ago were 2.023 (95% CI=1.090-3.753) times more likely to become a donor as compared to those that never receive information in university. It was also noted that respondents who had good knowledge of blood donation were 9.585 (95% CI=4.263-21.551) times more likely to become a donor compared to those who have poor knowledge. Furthermore, respondents who had average/satisfactory knowledge were 2.147 (95% CI=1.220-3.779) times more likely to become a donor compared to those who had poor knowledge as seen in Table 8.

DISCUSSION

Socio-demographic characteristics of respondents

The majority (74.3%) of the respondents were within the age groups of 18-23, which was higher than a study done in Ghana 45.2%.¹⁰ This young group of students in Kenyan universities could provide a chance as the students can assist as change agents in the voluntary blood donation drive. The study also found that more males (55.1%) participated in the study than females (45%), which was similar to the findings of a study done in Saudi Arabia 55% male and 45% female, respectively.¹¹

Knowledge of respondents on blood donation

The study revealed there was a distinction of knowledge among health science students 41.3% and non-health science students 24.9%, which is consistent with a similar study conducted among undergraduate non-health science and health science students in Addis Ababa, Ethiopia.¹² The study revealed that knowledge was related to type of college and bachelor program undertaking (p value=0.001) and (p value=0.002) respectively, but not related to age, gender, marital status, and religion. The study was found similar to a study done in India.¹³ The study revealed a significant relationship with knowledge and blood donation practices (p value=0.001). This study was found similar to a study done in Minnesota, USA.¹⁴ The level of knowledge is one of the main predictive factors for blood donation. At the same time, Raghuwanshi et al, in one of his study indicated that knowledge was correlated with a donation in the sense that the more information the student had, they were more likely to donate blood.¹⁵

Attitudes towards voluntary blood donation

The study revealed that attitude has no statistical relationship with donating blood (p value of 0.450 more than 0.005), implying as a non-predictor for donating blood. Having a favorable attitude does not predict whether or not university students will donate blood. This finding concurs with, where the authors noted that positive attitudes were prevalent amongst participants who had never donated blood and had no plans of doing so soon.¹⁶ Moreover, not all students with favorable attitudes were committing to donating blood. Irrespective of the favorable attitudes, some of these students still had major obstacles limiting them from accessing a blood donation center. There are other issues noted in this study that prevent students from donating blood. Over 40% of the non-donor students stated that they had never been asked to donate blood. This is similar to a study done in India where 40.75% mentioned the most common reason given by non-donors for not donating blood was no one asked them to give blood this meant that educating people about blood donation is ineffective if they are not asked to donate afterward.¹⁷ These students needed to be told to donate blood, and since they were not, they ended up getting the information and never really using it.

Dissemination of information on blood donation

This study also investigated the preferred communication channels for the students who stated that they would be willing to receive information on blood donation. Mass media (44.3%) was the most preferred channel. TV and radio seem very popular for the students. TV and radio showed that target students would be effective in disseminating all sorts of information related to blood donation. This is similar to a study in India where 45.2% identified TV as the most influential media for encouraging people to donate blood.¹⁷ Social media 43.7% was the second most preferred communication

channel, according to the findings. This is less than a study done in Iran where 50.2% of the university students preferred social media.¹⁶ Social media is effective in communicating the locations and dates for donating blood as well as debunking the myths related to blood donation. Unlike TV and radio, social media is significantly interactive such that the students can be fully engaged in discussions that will help them to learn more about blood donation, not just from medical practitioners but also from their experienced peers who donate blood.

Positive and negative effects on blood donors

The study showed that 36.4% of participants had donated blood. This finding is lower than a study conducted in India among undergraduate medical students in which 43.3% had donated blood, but higher in a study conducted in Nepal among medical and non-medical students in which 28.5% were donors.^{18,19} The study also showed a gender disparity where a greater proportion of the blood donors (61%) were males. This is similar to a study conducted in Nepal, where more boys donated than girls.¹⁹ More students may donate blood if they see it from the same perspective as the students who derive satisfaction from the donation. That giving blood can save lives should be a part of the message that the students get concerning blood donation.

CONCLUSION

It has been established that socio-demographic variables such as age and type of college, bachelor programs, year of study were statistically significant with donation, however, in the multivariate analysis, they did not retain their significance, which infers that they were not predictive factors for a person to donate blood. On the other hand, knowledge and last time received information on blood donation in University serve as predictive factors for a person to donate blood. The more information the student had, they were more likely to donate blood. The study also concludes that the main reasons for not donating were not asked to donate and lack of information in the universities.

Recommendations

Public health stakeholders and Kenyan National Blood Transfusion Services in collaboration with the university management teams should establish or strengthen blood donation clubs that will organize different events to build students' knowledge that will increase the number of blood donors. In addition, Kenya National Blood Transfusion Services Red Cross, and universities should organize periodic interactive awareness sessions using the mass media (TV, Radio) and social media to help improve blood donation practices.

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