Original Research Article

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

Melvin B. Moore*, Tabither Gitau, Atei Kerochi

Department of Epidemiology and Biostatistics, Mount Kenya University, Kenya

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*Correspondence:
Mr. Melvin B. Moore,
E-mail: mooremelvinb@gmail.com

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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 Gretsa 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 Gretsa 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 Gretsa 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.\(^9\)

\[
n = \frac{Z^2 \cdot pq}{d^2}
\]

\(n=\)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%).

\[
2 \times 0.5 (1 - 0.5) / (0.05)^2 = 385
\]

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 Gretsa University**

In the other institution (Gretsa 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).

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.

| 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| 49 |
| 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 | 37.9|
| 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        | P value           |
| Age (in years)                                |                   |                   |                   |                   |
| 18-23                                        | 93                | 24.2              | 193               | 50.1              |
| 24-29                                        | 38                | 9.9               | 47                | 12.2              | 9.101             | 0.011*             |
| 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                |                   |                   |
| Average                                      | 73                | 36.9              | 125               | 63.1              | 46.223            | 0.000*             |
| 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                |                   |                   |
| 2-3 years                                    | 6                 | 30                | 14                | 70                |                   |                   |
| 6 months ago                                 | 64                | 45.7              | 76                | 54.3              | 12.164            | 0.007              |
| Never                                        | 40                | 26.7              | 110               | 73.3              |                   |                   |
| Are you likely to donate blood when receive information? | Yes | 129 | 40.8 | 187 | 59.2 | 0.000* |
| No                                          | 11                | 7.9               | 58                | 23.7              | 15.151            |                   |
| Willing to receive information on blood donation | Yes | 137 | 39 | 214 | 61 | 0.000* |
| No                                          | 3                 | 8.8               | 31                | 91.2              | 12.223            |                   |

*Statistically highly significant at p<0.05
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.

| Response                                                                 | Health science student | Non-health science student | Total (n=385) |
|-------------------------------------------------------------------------|------------------------|----------------------------|--------------|
| Knowledge                                                               | N   | %  | N   | %  | N (%) |
| 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 |
| Willingness to receive information on blood donation                     | Yes 91.2 |
| More likely to donate if knew more information on blood donation         | Yes 82.9 |
| Blood donation practices among respondents                               | Donors 36.4 |
| 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 |
| 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

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