

# Blood donation practice and its predictors among undergraduate college students in Harari Regional State, Eastern Ethiopia

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## Abstract

**Objectives:** The main objective of this study was to assess blood donation practice and its associated factors among undergraduate college students in Harari Region, Eastern Ethiopia.

**Methods:** An institutional-based cross-sectional study was employed among 518 college students selected by using a simple random sampling technique. Data was collected using pretested structured self-administered questionnaire. The collected data was entered into Epi-data 3.41 and exported to Statistical Package for Social Science version 22 for analysis. Bivariate and multivariable logistic regressions were utilized to identify factors associated with blood donation practice. *p*-Values of 0.05 or less was used to declare statistical significance.

**Results:** In this study, the overall blood donation practice was 35.7% (95% confidence interval: 31.6, 39.8). Students studying health sciences were more likely than non-health sciences students (53.5%) to donate blood. Having positive knowledge about blood donation (adjusted odds ratio = 4.17; 95% confidence interval: 2.50, 6.92), being male (adjusted odds ratio = 0.57; 95% confidence interval: 0.38, 0.87), being student of midwifery department (adjusted odds ratio = 2.16; 95% confidence interval: 1.07, 4.36) and nursing department (adjusted odds ratio = 2.42; 95% confidence interval: 1.18, 4.98) were significantly associated with blood donation practice.

**Conclusion:** Practice of blood donation among college students in the study is relatively low. Knowledge about blood donation, male sex and being a nursing and midwifery student were independently associated with blood donation practice. Therefore, the Regional Health Bureau and Blood Bank in collaboration with college administrators should design and implement appropriate strategies to improve blood donation practice.

## Keywords

Blood donation, Eastern Ethiopia, knowledge, practice, students

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## Introduction

Blood donation is remained to be the primary supply of blood and blood components globally, and blood transfusion and component treatments are essential components of contemporary medical interventions.<sup>1</sup> It is one life-saving practice in emergent and non-emergent situations to replace the loss of large volumes of blood due to traffic accidents, obstetric hemorrhage and other causes of anemia.<sup>1,2</sup> The majority of the blood used for transfusions is collected from voluntary non-remunerated blood donors since they have the lowest incidence of transfusion-transmittable infection.<sup>3</sup> However, blood transfusions face several challenges

including the sustainability and availability of safe blood, particularly in developing countries.<sup>4</sup>

Worldwide an estimated 118.5 million units of donated blood are collected annually, with high-income countries

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collecting 40% of this total. The rates of blood donation in different countries vary significantly. High-income countries have a blood donation rate per 1000 persons that is six times greater than low-income countries (31.5 versus 5.0 donations).<sup>5</sup> World Health Organization (WHO) urged all countries to collect blood from voluntary non-remunerated donors.<sup>6</sup> However, more than 34 African countries have donation rate that are below than the 1% WHO criterion needed to provide the most basic blood supply.<sup>5,7</sup> Blood shortages are a recurrent issue in Ethiopia.<sup>8</sup> Nearly 200,000 units of blood are collected from donors each year in Ethiopia. However, the country needs over 18,000 units of blood each day, but only roughly 1100 units are collected on a daily average, leaving a gap of 16,900 units.<sup>9</sup>

In sub-Saharan Africa, more than 1.96 million women died every year as a result of pregnancy-related complications.<sup>7,10,11</sup> Developing countries are also experiencing an increase in the number of injuries and fatalities caused by traffic accidents globally.<sup>12</sup> Hemorrhage is the primary cause of most of these fatalities, and blood transfusions might prevent it.<sup>13</sup> Also, Ethiopia is a country with 25%–40% of maternal death every year due to a shortage of enough blood supply from blood donors.<sup>14</sup> Even though Ethiopia has a population of over 100 million people, the availability of blood remains inadequate to meet the increased demand for blood and blood components.<sup>9</sup> Ages between 18 and 65 with a body weight of over 45 kg are allowed to give blood in Ethiopia. Between 350 and 450 ml of blood must be given in a single donation. Another eligibility requirement for blood donation is a hemoglobin level greater than 12 g/dl for females and 13 g/dl for males.<sup>14</sup> Studies revealed that blood donation practice ranges from 15.5%–43.6% in the general adult populations,<sup>15–18</sup> and 12.5%–35.5% in college students.<sup>19–21</sup> Another study from Bangladesh and India reported that blood donation practice among college student was 54% and 22.9%, respectively.<sup>22,23</sup> There are different factors affecting blood donation practice including societal misconceptions, knowledge and attitude about blood donation, age, sex, and educational status.<sup>16,19,21</sup>

In general, developing a comprehensive plan for voluntary blood donation and finding enough trustworthy blood donors are difficult tasks in Ethiopia. This may be linked to inadequate community awareness of voluntary blood donation, a negative attitude toward it, and poor blood donation practices. By taking into account the community's culture and living conditions, new and localized techniques must be developed to overcome the identified gap.<sup>24</sup> College students are part of the young population and they are the hope of the present and future source of safe blood supply.<sup>25,26</sup> If appropriate strategies are designed and put into practice to enhance the practice of blood donation, college students may inspire and serve as role models for the community as a whole. As a result, the main objective of this study was to evaluate blood donation practice and its associated factors among undergraduate college students in Harari Regional State, Eastern Ethiopia.

## Material and methods

### Study design, period and area

A cross-sectional study was conducted from March 10 to 25, 2019 in Harar city, Eastern Ethiopia. Harar city is located 526 km away from Addis Ababa, the capital city of Ethiopia in the east direction. The city has four governmental, and six non-governmental colleges. This study was conducted at Menschen für Menschen Agro Technical and Technology College (MFMATTC) and Harar Health Sciences College (HHSC). MFMATTC was founded by Karl Heinz Böhm and it offers regular undergraduate training programs in different departments for about 800 students. HHSC is one of the government institutions and has nine departments of health sciences at the time of the study including clinical pharmacy, midwifery, clinical nurse, medical laboratory sciences, emergency nurse, pediatric nurse, anesthesia, and public health department with more than 1200 students.

### Study population

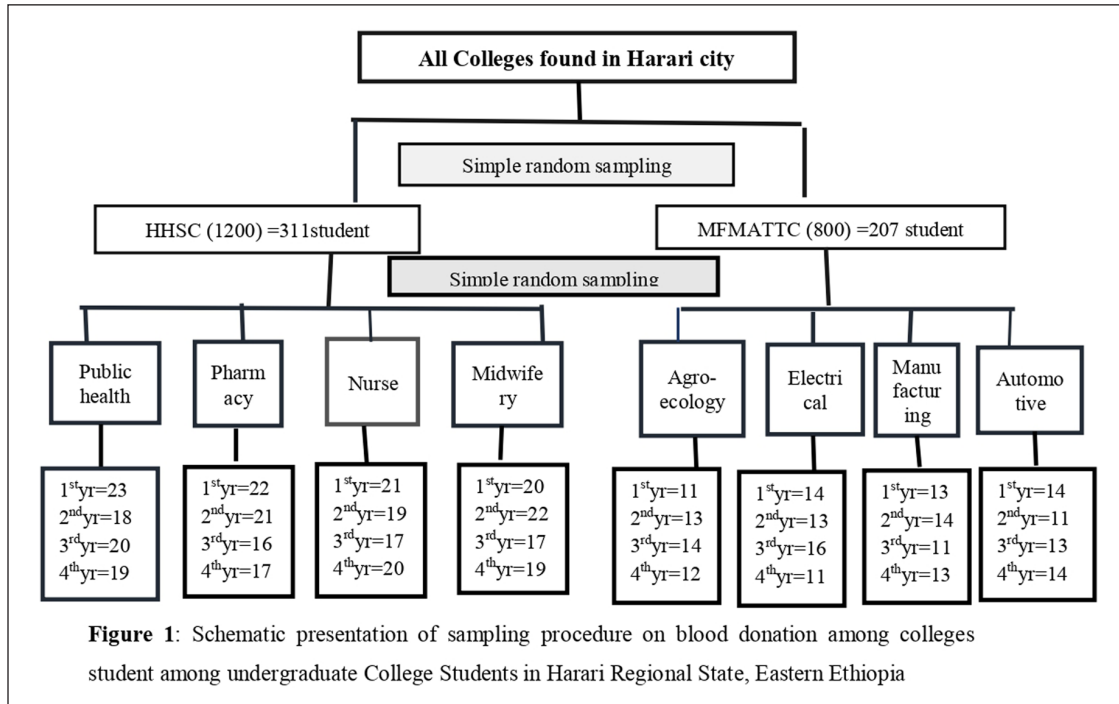
The source population was all regular undergraduate college students in Harari Region State, Eastern Ethiopia. While the study population was all regular undergraduate students of the HHSC and MFMATTC during the study period. Those students who were below 18 years old, who did not voluntarily participate and/or were not able to respond to the study questionnaire were excluded from the study.

### Sample size and sampling technique

A single population proportion formula was used to calculate the sample size ( $n = (Z_{\alpha/2})^2 p(1-p)/d^2$ ) with the following assumptions: proportion of blood donation practice ( $p = 27.2\%$ ) from a previous study conducted in Ethiopia,<sup>27</sup> 95% confidence interval (CI), 5% margin of error ( $d$ ), design effect of 1.5, and 15% non-respondent rate. Thus, the final sample size for this study became 524. A multi-stage sampling technique was applied to recruit the respondents. First, the two colleges were chosen by simple random sampling methods and the sample size was proportionally distributed to each college. The college was again stratified into different departments as indicated in Figure 1. Four departments from each college were chosen randomly. The allocated sample size for each institution was then proportionally distributed among randomly chosen departments' in each college. Furthermore, 'the sample size allotted to the chosen department was proportionately distributed to the number of students under each year of study (524 samples from first to fourth years students)'. Finally, each study participant was selected using a simple random sampling technique based on the student's registration record (Figure 1).

### Data collection method

Data were collected by four trained clinical nurses using a pretested self-administered structured questionnaire. The



**Figure 1.** Schematic presentation of sampling procedure on blood donation among colleges student among undergraduate College Students in Harari Regional State, Eastern Ethiopia. HHSC, Harar Health Sciences College; MFMATTTC, Menschen für Menschen Agro technical and Technology College.

questionnaire was developed by adapting from different literature.<sup>19,20,28</sup> The questionnaire contains socio-demographic characteristics of students (age, sex, residence before joining the college, year of study, field of education, department). Additionally, the tool contains inquiries about students’ knowledge, attitudes, and practices towards blood donation. Twelve yes/no questions were used to evaluate students’ level of knowledge of blood donation. Each response received a score of ‘1’ for a right answer and ‘0’ for a wrong one.<sup>17,19</sup> Those study participants who score  $\geq 70\%$  correct responses were categorized as having positive knowledge about blood donation. Similarly, 11 questions with a ‘yes’ or ‘no’ response were used to assess attitudes towards blood donation. The answers to each attitude questions were evaluated as ‘1’ for a right answer and ‘0’ for wrong answer. Participants who scored more than 70% of the right answers were categorized as having a positive attitude toward blood donation.<sup>19</sup> Finally, the practice was assessed by asking about the history of previous donations and the frequency of donations.

**Statistical analysis**

Data were checked for completeness, coded, entered into Epidata version 3.1 then exported to SPSS version 22 for analysis. Descriptive statistics such as frequency, mean, and standard deviation were computed. Bivariable and multivariable logistic regression analysis were fitted to determine

factors associated with the practice of blood donation. All variables with  $p$  value of  $<0.25$  in the bivariate logistic regression analysis were retained for multivariable logistic regression analysis. The adjusted odds ratio (AOR) and 95% CI were used to show the direction and strength of statistical association. A  $p$ -value  $<0.05$  was used to deem statistical significance.

**Data quality assurance and management**

The data collectors received training for 1 day before the actual data collection commenced. Pre-test was conducted at the Haramaya University College of Health and Medical Sciences and the Harar Teachers Training College on 5% of the total sample size. The completeness of information and clarity of the collected data were checked daily. Data was double-entered independently by two individuals.

**Results**

**Socio-demographic characteristics of study participants**

A total of 518 students took part in the study, with a response rate of 98.8%. Half (50.2%) of the study participants were selected from HHSC. The mean age of the study participants was 21.12 (SD  $\pm$  1.922) years, with the range of 18–36. A higher number of students were selected from the first year

**Table 1.** Socio-demographic characteristics of study participants at Harar Health Sciences and Menschen für Menschen College, Harari Regional State, Eastern Ethiopia, 2019.

Variables	Category	Frequency n (%)
College	HHSC	260 (50.2)
	MFMATTC	258 (49.8)
Year of study	First	149 (28.8)
	Second	134 (25.9)
	Third	113 (21.8)
	Fourth	122 (23.5)
Department of the students	Automotive	52 (10)
	Manufacturing	53 (10.3)
	Agro-ecology	56 (10.8)
	Electrical	97 (18.7)
	Midwifery	38 (7.3)
	Pharmacy	95 (18.3)
	Nurse	67 (13)
Sex	Public health	60 (11.6)
	Male	316 (61)
Previous residence	Female	202 (39)
	Urban	367 (70.8)
Religion	Rural	151 (29.2)
	Orthodox	212 (40.9)
	Muslim	183 (35.3)
	Protestant	104 (20.1)
	Others*	19 (3.7)

HHSC, Harar Health Sciences College; MFMATTC, Menschen für Menschen Agro technical and Technology College.

\*Other, catholic and Jehovahahovah.

(28.8%), electrical technology (18.7%) and (18.3%) pharmacy departments (40.9%) (Table 1).

### Knowledge about blood donation

The majority of participants (90.9%) heard about blood donation, and 93.1% knew about the importance of blood donation. Less than 50% of study participants did not know about the amount of blood donation and the time spent on blood donation. The overall prevalence of positive knowledge about blood donation was 72.2% (95% CI: 68.4, 76.0). The majority of students with positive knowledge were from HHSC 78.8% as compared to students from MFMATTC 65.1% (Table 2).

### Attitude towards blood donation

Of the total respondents, 96.9% of respondents thought that blood donation saves a life, 94.4% of participants thought that blood donation is a good habit, 86.9% believed that voluntary blood donation is the best source to get safe blood, 85.5% and 84.2% respondents expressed a willingness to donate blood in the future and encourages their relatives to donate blood, respectively. Additionally, more than half

**Table 2.** Knowledge of students about blood donation-related information at Harar Health Sciences and Menschen für Menschen College, Harar Regional State, Eastern Ethiopia, 2019.

Knowledge questions	Yes (%)	No (%)
Have you heard about blood donation before this study?	471 (90.9)	47 (9.1)
Do you know the most common blood group types?	438 (84.6)	80 (15.4)
Do you know your blood group type?	259 (50)	259 (50)
Do you know blood donation is important?	482 (93.1)	36 (6.9)
Do you know a donor can donate every 3 months?	344 (66.4)	174 (33.6)
Do you know the amount of blood donated at one donation?	246 (47.3)	273 (52.7)
Do you know infection can be transmitted while a blood transfusion?	398 (76.8)	120 (23.2)
Do you know the blood donation process takes less than 20 min?	258 (49.8)	260 (50.2)
Do you know the minimum age limit for donors to donate blood?	312 (60.2)	206 (39.8)
Do you know the minimum weight of donors to donate?	377 (72.8)	141 (27.2)
Is blood donation harmful to donors?	389 (75.1)	129 (24.9)
Do you know blood should be screened before donation?	351 (67.8)	167 (32.2)
Overall knowledge		
Positive knowledge	373 (72)	
Negative knowledge	145 (28)	

(61.2%) of respondents said that incentives blood donors shouldn't be given. Overall, 313 (60.4%) study participants had a positive attitude toward blood donation (Table 3).

### Blood donation practice of students

The prevalence of blood donation practice was 35.7% (95% CI: 31.6, 39.8). The donation practice was higher among students from HHSC 53.5% than MFMATTC 46.5%. One hundred forty-eight (79.8%) were preferred voluntary blood donors. The most common reason for not donating blood was fear of needles (41.1%) and discomfort after donation (28.5%; Table 4).

### Factors associated with blood donation practice

In the bivariate analysis sex, religion, knowledge, attitude, department, and the class year was a candidate for multivariable analysis. In multivariable analysis, study participants with good knowledge about blood donation, being male and department of study participants (midwifery and nurse) were



**Table 3.** Attitude of students about blood donation-related information at Harar Health Sciences and Menschen für Menschen Colleges, Harar regional state, Eastern Ethiopia, 2019.

Attitude questions	Yes (%)	No (%)
Do you think blood transfusion saves live?	502 (96.9)	16 (3.1)
Do you think that donating blood is a good habit?	489 (94.2)	29 (5.6)
Do you think there is a need to give incentives to those who donate blood?	201 (38.8)	317 (61.2)
Do you think that voluntary blood donation is the best source to get safe blood?	450 (86.9)	68 (13.1)
Do you think blood donation makes you weak?	354 (68.3)	164 (31.7)
Do you think patient relatives should be asked to donate blood?	205 (39.6)	313 (60.4)
Do you think donating blood lowers the donor's immunity?	352 (68)	166 (32)
Do you think you feel sick after the donation?	310 (59.8)	208 (40.2)
Do you think blood donation could lead to anemia?	348 (67.2)	170 (32.8)
Do you encourage relatives to donate?	436 (84.2)	82 (15.8)
Are you willing to donate in the future?	443 (85.5)	75 (14.5)
Overall attitude		
Positive attitude	313 (60.4)	
Negative attitude	205 (39.6)	

**Table 4.** Blood donation practice, type of donation, and reason not to donate blood among Harar Health Sciences and Menschen für Menschen College students, Harari Regional State, Eastern Ethiopia, 2019.

Characteristics	Category	Frequency, n (%)
Donation practice	Yes	185 (35.7)
	No	333 (64.3)
Frequency of blood donation practice in lifetime	Once	99 (53.5)
	Twice	51 (27.6)
	More than twice	35 (18.9)
Type of blood donation	Voluntary	146 (79.8)
	Replacement	10 (5.4)
	Financial incentive	2 (1.1)
	To save lives	27 (14.6)
Reason not to donate blood	Discomfort after donation	95 (28.5)
	No privacy while donation	37 (11.1)
	Fear of needle	137 (41.1)
	Fear of knowing HIV status	10 (3)
	Have no interest	54 (16.2)

factors that were significantly associated with blood donation practice ( $p < 0.05$ ). Those respondents with good knowledge were about four times more likely to donate than those with poor knowledge (AOR=4.17; 95% CI: 2.50, 6.92). Female students were 43% less likely to donate blood than male students (AOR=0.57; 95% CI: 0.38, 0.87). Those students from midwifery (AOR=2.16; 95% CI: 1.07, 4.36) and nursing (AOR=2.42, 95% CI: 1.18, 4.98) departments were more than two times more likely to donate than the automotive department (Table 5).

## Discussion

Only human blood sources used to get blood to fulfil emergency needs, since blood cannot be produced artificially.<sup>29</sup>

Blood donation is a crucial process that regularly has to be carried out at medical facilities, especially in developing countries like Ethiopia, where 25%–40% of maternal deaths are reported annually.<sup>14</sup> In this study, it was found that 35.7% of study participants have ever donated blood in their lifetime. This finding is concurrent with the report from Mizan-Aman Health Science College, Southwest Ethiopia, which reported that blood donation practice among college students was 35.5%.<sup>21</sup> However, the current finding is higher than the finding of several studies. The reports of previous studies showed that blood donation practice was 18.1% in Nepal,<sup>26</sup> 27% in Sudan,<sup>30</sup> 12.5% in Northwest Ethiopia,<sup>19</sup> and 24.5% in Samara university, Afar Ethiopia.<sup>20</sup> However, a study from Saudi Arabia reported that 45% of study participants had donated blood which is higher than the present findings.<sup>31</sup> The observed disparity could be due to the differences in the study setting, socioeconomic status, sample size, and study time.

The current study revealed that blood donation practice was higher among health science students than non-health science students (53.5% versus 46.5%). Similarly, a study conducted at Arsi University and Adama Science and Technology University found that health science students have higher blood donation practices as compared to non-health science students (27.2% versus 22.8%).<sup>27</sup> However, the practice of health science students' blood donation in the present study is in contrast to a study carried out in South India 10.75%,<sup>27</sup> Spain, 32.62%,<sup>32</sup> Nepal, 22.2%,<sup>33</sup> Saudi Arabia 30.1%<sup>34</sup> and Northeast Ethiopia 12.4%.<sup>35</sup> This might be due to the difference in the implementation of blood donation campaigns and different barriers to blood donation including being unqualified for blood donation and fear of contracting diseases.<sup>36</sup>

In the present study, nearly 75% of the study participants knew about blood donation, and almost 60% of them had a positive attitude of blood donation. Having positive knowledge of blood donation was strongly associated with the

**Table 5.** Bi-variable and multivariable logistic regression for predictors associated with blood donation practice at Harar Health Sciences and Menschen für Menschen Colleges, Harari Regional State, Eastern Ethiopia, 2019.

Variables	Category	Blood donation		COR (95% CI)	p-value	AOR (95% CI)
		Yes, n (%)	No, n (%)			
Age				0.92 (0.34, 1.35)	0.094	0.85 (0.65, 1.34)
Residence	Urban	130 (35.4)	237 (64.6)	1		
	Rural	55 (36.4)	96 (63.6)	1.04 (0.70, 1.55)	0.83	0.45 (0.23, 1.78)
Sex	Male	125 (39.6)	191 (60.4)	1		1
	Female	60 (29.7)	142 (70.3)	0.65 (0.44, 0.94)*	0.02	0.57 (0.38, 0.87)**
Religion	Orthodox	94 (44.3)	118 (55.7)	1		1
	Muslim	55 (30.1)	128 (69.9)	0.45 (0.12, 1.29)*	0.14	0.09 (0.12, 1.18)
	Protestant	31 (29.8)	73 (70.2)	0.83 (0.28, 2.42)	0.74	0.99 (0.31, 3.21)
	Other	5 (26.3)	14 (73.7)	0.84 (0.28, 2.54)	0.76	0.64 (0.24, 1.56)
Knowledge about blood donation	Poor	24 (16.6)	121 (83.4)	1		1
	Good	161 (43.2)	212 (56.8)	3.83 (2.36, 6.21)*	0.001	4.17 (2.51, 6.93)**
Attitude about blood donation	Negative	67 (32.7)	138 (67.3)	1		1
	Positive	118 (37.7)	195 (62.3)	1.25 (0.86, 1.81)*	0.24	0.73 (0.71, 1.63)
Department	Automotive	19 (36.5)	33 (63.5)	1		1
	Manufacturing	17 (32.1)	36 (67.9)	1.74 (0.81, 3.71)*	0.15	2.01 (0.90, 4.47)
	Agroecology	20 (35.7)	36 (64.3)	2.12 (0.98, 4.56)*	0.06	2.12 (0.94, 4.77)
	Electrical	30 (30.9)	67 (69.1)	1.80 (0.86, 3.79)*	0.12	1.32 (0.6, 2.92)
	Midwifery	13 (34.2)	25 (65.8)	2.23 (1.15, 4.34)*	0.02	2.16 (1.07, 4.36)**
	Pharmacy	26 (27.4)	69 (72.6)	1.92 (0.83, 4.45)*	0.13	1.57 (0.65, 3.82)
	Nurse	30 (44.8)	37 (55.2)	2.65 (1.35, 5.23)*	0.01	2.42 (1.18, 4.98)**
	Public health	30 (50.0)	30 (50.0)	1.23 (0.61, 2.48)	0.56	1.38 (0.66, 2.87)
Class year	First	46 (30.9)	103 (69.1)	1		1
	Second	41 (30.6)	93 (69.4)	1.66 (1.009, 2.74)*	0.05	1.65 (0.96, 2.83)
	Third	46 (40.7)	67 (59.3)	1.69 (1.01, 2.82)*	0.05	1.54 (0.87, 2.63)
	Fourth	52 (42.6)	70 (57.4)	1.08 (0.64, 1.82)	0.77	1.10 (0.63, 1.92)
College	MFMATTC	86 (33.3)	172 (66.6)	1		1
	HHSC	99 (38.1)	161 (61.9)	1.23 (0.86, 1.76)	0.26	1.15 (0.64, 1.89)

COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval.  
\* $p < 0.25$ , \*\* $p < 0.05$ .

practice of donating blood. Positive blood donation knowledge increased the likelihood of blood donation by four times compared to negative blood donation knowledge. This finding is consistent with a study conducted in Saudi Arabia,<sup>34</sup> and southwest Ethiopia.<sup>21</sup> It is argued being knowledgeable about blood donation and having a positive attitude are characteristics that encourage people to donate blood. However, due to the persistently held myths and incorrect impressions in the participants' community, knowledge and attitude may not necessarily lead to actual blood donation practice.<sup>18</sup> Besides, the present result was also conversely to a study conducted in Gondar, which stated that the proportion of donors with positive knowledge about voluntary blood donation was not significantly associated with the practice of blood donation.<sup>19</sup>

The main barrier to blood donation among Harar Health Sciences and Menschen für Menschen Colleges' students in our study was fear of needles and discomfort after donation. This result is consistent with another study conducted in India and Nigeria showed the main barrier to hesitating

blood donation was fear of pain.<sup>37,38</sup> Conversely, studies conducted among university students in Tanzania and Bangladesh showed the primary reason for not donating blood was due to poor knowledge, and lack of knowledge about an opportunity for blood donation respectively.<sup>39,40</sup>

This study shows there is a significant association between gender and the practice of blood donation. Compared to male students, female students were 43% less likely to donate blood. This finding is in line with previous studies.<sup>27,34</sup> This might be related to less frequent mass-media exposure of females, the cultural taboo, and females being given few opportunities and fewer options.<sup>41</sup> The other reason is that women are more likely to have physiological circumstances that prevent them from donating blood like menstruation and bleeding during pregnancy and delivery.<sup>42</sup> This suggests that women should be informed more about the health advantages of blood donation and health information delivery through campaigns and different sources of information.

Furthermore, in this study students from midwifery and nursing departments were more likely to practice blood

donation as compared to the non-health science department specifically, the automotive department. This finding is supported by previous studies conducted at Arsi University.<sup>27</sup> This could be a result of the education given to health science students. Thus, they may have a greater awareness of the value of blood donation. Additionally, direct exposure to various hospital wards may enhance students' understanding of, attitudes about, and practices around blood donation.<sup>27</sup>

As a strength, the present study tried to include both health and non-health sciences students which provide good estimates of the magnitude and identified possible factors for blood donation practice among the young population. However, the result should be interpreted in light of the following limitations: first, due to the cross-sectional nature of the study design, the temporal relationship between predictors and outcome variables cannot be established. Second, this study doesn't also include different variables which include the socio-economic, educational and employment status of the student's family.

## Conclusion

The present study showed there is low blood donation practice among college students in Harar city, Eastern Ethiopia. The magnitude of blood donation is higher among health science students. Positive knowledge about blood donation, male sex, and being a nursing and midwifery department student were factors significantly associated with blood donation practice. The common reason for students not being able to donate blood was fear of needles and discomfort after donation. Based on the finding of this study, the Harari regional blood bank in collaboration with the college administration should provide awareness creation to students through periodic sensitization and health information dissemination to encourage blood donation practice, especially for those students not enrolled in health-related departments.

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## Author contributions

EI developed the proposal, took part in data collection and analysis, and drafted the proposal. EY, AD, DT, GA, MA, and ZT, approved the proposal and have made a significant contribution during data collection and analysis, in writing the draft of this article. All authors read and approved the final version of this article. The journal to which the article will be submitted has been decided by all authors, who have also given their final approval of the version to be published and agreed to be responsible for all parts of the work.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Ethical considerations

Ethical approval was sought from the Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University College of Health and Medical Sciences with Ref. No. IHRERC/071/2019. The purpose and objective of the study were explained to the selected college administrative body and study participants. Voluntarily signed consent was obtained from heads of the selected colleges and study participants before the data collection. Confidentiality of information was kept throughout the study through the use of anonymous identifiers

## Informed consent


Written informed consent was obtained from all the study participants. The proposal article was reviewed by the Ethics Review Committee of Haramaya University before the study began, and it was approved.

## Trial registrations

Not applicable

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## Supplemental material

Supplemental material for this article is available online

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