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# Knowledge, Attitude, Practice of Blood Donation & Associated Factors Among Undergraduate Regular Students at Arbaminch University College of Medicine & Health Sciences, Gamo Zone, SNNPR, Ethiopia, 2022Gc

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## *Abstract*

***Background**: Blood donation is when a healthy and eligible person voluntarily draws blood for transfusions to those in need. A large volume of blood could be lost as a result of conditions such as traffic accidents, obstetric and gynecological hemorrhages, surgery, and trauma. Every year, 25%–40% of Ethiopian pregnant mothers die due to a shortage of enough blood supply from blood donors. Donor eligibility, negative Attitude, and lack of education lead to blood shortages in various facilities. This study aims to assess the Knowledge, Attitude, and Practice of blood donation &associated factors among undergraduate regular students at AMU CMHS.*

***Methods:** Institution-based cross-sectional study design was conducted to assess KAP of blood donation and related factors among medicine and health science students at AMU CMHS. A simple random sampling method was employed to select study participants. A total of 315 students participated in the study. Data was collected using a self-administered questionnaire by using a structured, pre-tested English version questionnaire. Data was checked manually for completeness; data was entered and analyzed using SPSS software version 25. A binary logistic regression model was fitted to identify factors associated with Practice regarding blood donation (p <0.2).*

***Result:** Among 315 undergraduate CMHS students, 154(49.2%) and 169(53.7%) had adequate Knowledge about and positive attitudes regarding blood donation, respectively. About 136(43.2%) of them had ever donated blood before. This study also identified that the study participants whose fathers were teachers were 3.7 times more knowledgeable than those in other occupations. This study revealed that the study participants who came from rural areas were found to be 50% less knowledgeable than those from urban areas. Participants whose family members have ever donated blood were found to be 2.9 times more knowledgeable than those participants whose family members have never donated blood.*

***Conclusion:** Although more than half of the students had a positive attitude regarding blood donation, blood donation practice and level of Knowledge were low. Targeted strategies should be designed to increase health science students' awareness of blood donation. Strategies that encourage students to donate blood voluntarily should also be designed*

***Keyword:** Attitude, Blood donation, Knowledge, Practice, Students, Arbaminch.*

## 1. Introduction

### 1.1. Background

Blood donation is the process in which a volunteer who is a healthy and eligible person voluntarily draws his/her blood for transfusions to those in need. There are different types of blood donors, such as voluntary, replacement, paid, and family. The safest and best blood source comes from unpaid volunteer donors [1].

Without a sufficient amount of blood, the cells of the human body cannot receive adequate oxygen and nutrients they need to survive. A large volume of blood could be lost as a result of conditions such as traffic accidents, obstetric and gynecological hemorrhages, surgery, and trauma [2].

Every year, 25%–40% of Ethiopian pregnant mothers die due to a shortage of enough blood supply from blood donors. Therefore, ensuring the availability of safe blood at all health facilities could reduce maternal deaths, which makes sure that the lives of every pregnant mother will not be threatened in case of emergencies due to lack of blood [3,4].

The willingness to donate blood without expecting a financial reward is one major factor that influences blood donation practice. Donor eligibility, negative Attitude, and lack of education lead to blood shortages in various facilities [5].

The age range plausible to donate is 18 years up to 65 years, with 45 kg and above kg of weight. The amount of blood donated in a single donation is from 350ml to 450ml. The hemoglobin level should be more than 12g/dl for females and 13g/dl for males with blood pressure in the range of 110-160/70-95mmHg.When an individual donates blood, it should be safe blood. Safe blood is blood that does not contain any virus, parasites, drugs, alcohol, or chemical substances that might cause harm or disease to the recipient. [6].

Young populations are crucial segments of the population and they are the hope of present and future sources of safe blood supply [7, 8].

Part of the young population are Health Science university students who are healthy, active, dynamic, resourceful, and receptive and may constitute a greater proportion to blood donation; and they have to be encouraged, inspired and -motivated to donate blood voluntarily [9,10].

Although sufficient Knowledge about blood donation is estimated to be 60% in developing countries, the blood donation rate in low-income countries is far less than that in middle- and high-income countries (11, 12). Blood donation rate was less than satisfactory due to misconceptions, poor Knowledge and unfavorable Attitudes toward donation [13].

### 1.2. Statement of the problem

In the developed world, most blood donors are voluntary, non-remunerated repeat donors who donate blood for a community supply. In poorer countries, established supplies are limited, and donors usually give blood when family or friends need a transfusion. Many donors donate as an act of charity, but in countries that allow paid donations, some donors are paid, and in some cases, there are incentives other than money, such as paid time off from work. Donors can also have blood drawn for their future use (autonomous donation) [14].

WHO estimates that blood donation by 1% of the population is generally the minimum needed to meet the population's basic requirements for blood; the requirements are higher in countries with more advanced healthcare systems. However, the average donation rate is 15 times lower in developing countries than in developed countries. Globally, more than 70 countries had a blood donation rate of less than 1% or ten donations per 1000 population in 2006 [15].

WHO African region, blood requirements were estimated at 8 million units in 2006, but only 3.2 million units were collected. African region frequently experiences man-made natural disasters that considerably increase the demand for blood transfusion. Unfortunately, many countries in the region do not collect low, estimated at 4.15 per 1000 population in 2006 compared with over 30 per 1000 population 20, 21 on average in developed countries [15].

Ethiopia has one of the highest maternal mortality rates of 412/100,000 (EDHS 2016) and a serious motor vehicle accident (ranks 12th in the world). One of the three major causes of maternal mortality is hemorrhage. Some 87,000 units of blood are donated for transfusion in Ethiopia, although the country needs 200,000 units of blood annually, the National Blood Bank of Ethiopia disclosed. So, only 43% of the total unit of blood needed was met [16].

To ensure safe, adequate, and sustainable blood supplies all over the country, health science students have a significant role in different ways.

Even if the health science students know about blood donation, in Practice, initiating the community to donate blood is very low. As we know, it is vital for health science students to mobilize the community toward voluntary blood donation in the future. So, they have to be in front to practice and show as well as overcome awareness and Attitude about the importance of blood donation.

### 1.3. Significance of The Study

Blood donation is a self-directed volunteer service. However, there is no sufficient data throughout Ethiopia, including the study area, to have adequate blood supply for acute case management, and this study will find the present situation of Knowledge, Attitude, and Practice related to blood donation among health science students at Arbaminch University CMHS. As a result, the Knowledge, Attitude, and Practice of health science students are very important to improve blood donation all over the country.

The outcome of research may help in program formulation for concerned people and organizations to create awareness and incorporate health science students in regular donation activities and educate the public about the importance of blood donation and the risks associated with donation.

If appropriate strategies are designed and implemented to improve Knowledge, Attitude, and Practice, health science students will become not only future blood donors but also motivators and role models for the community.

Therefore, the main aim of this study will be to assess Knowledge, Attitude, and practice toward blood donation among health science students of Arbaminch University CMHS.

## 2. Literature review

### 2.1. Magnitude

A comparative cross-sectional study was done on 424 ambulatory patient attendants at Arbaminch General Hospital. Of these, 319 (75.2%) were males. More than half of the participants were in the age group of 25-34 years, and More than one-half of the participants, 262 (61.8%), were Orthodox Christians, followed by protestants, 92 (21.7%); the majority 298 (70.3%) were married; 274 (64.6%) were from the urban area; one third 155 (36.6%) of participants were illiterate and 168 (39.6%) earns monthly income between 4501-6500 ETB.

The majority of respondents, 301(71.1%), had exposure information concerning blood donation, and the main sources of information were health institutions and media 124 (41.2%) and 98(32.6%), respectively [27].

A comparative cross-sectional study was done on 360 undergraduate students of Arsi University. The majority of Health Science students, 143(79.4%), have good Knowledge regarding blood donation. On the other hand, only 25(13.9%) of Non-Health Science students were shown to have good Knowledge. generally, there is a significant knowledge difference was observed.

Less than half 84(46.7%) and 64(35.6%) of Health and Non-Health Science students have favorable attitudes towards blood donation respectively. Health Science students are shown to have a better level of Attitude when compared to Non-Health Science. Regarding blood donation practices, 49 (27.2%) and 41 (22.8%) of Health and Non-Health Science students donate blood at least once in their lifetime, respectively.

A significant difference was observed regarding the level of blood donation practice between health and Non-Health Science students [20]. An institution-based cross-sectional study was done to assess KAP and associated factors toward voluntary blood donation (VBD) among 319 health science students of Samara University. Among the study participants, 319(94.1%) had information about blood donation, and 305(90%) of the respondents had Knowledge of the source of blood for donation. It was found that 54% of the respondents have adequate Knowledge. However, the remaining 46% did not.

Among overall respondents, 93.5% said blood donation is a good habit, whereas 6.5% think badly. Furthermore, 82.9% of the respondents replied that they are willing to donate blood voluntarily in the future. Similarly, 92.3% of individuals responded that VBD is the best source of blood donation. Concerning the overall Attitude of the study, it was observed that 65.8% of respondents had a favorable attitude toward VBD. The remaining segment had an unfavorable attitude towards VBD. As far as blood donation practice is concerned, only less than one quarter, 83 (24.5%), have ever donated blood, and the remaining 256(75.5%) never exercised any blood practice so far. More than fifty-seven (57.8) percent of donors had donated blood once in their lifetime. Moreover, only 16 (19.3%) reported to have had donated blood regularly based on voluntarism [21].

An institutional-based cross-sectional quantitative study was conducted among 346 Graduating Class Students of Assosa University in 2018**.** In this study, 162 (48.5%) had adequate Knowledge of blood donation. Around 241 (72.2%) of respondents know the medical benefits of VBD, and 223 (66.8%) of them say no human blood is manufactured artificially in the laboratory. However, only 127 (38.0%) of respondents know the minimum time interval between two donations, and 97 (29.0%) of them know the volume of blood donations at a time. Among the overall respondents, 207 (62.0%) said blood donation is a good habit, 79 (23.6%) of them think bad, and 48 (14.4%) of them say no idea. Around the mean range, 168 (50.3%) of study participants responded that voluntary blood donation is the best source of blood donation. The overall Attitude of individuals towards voluntary blood donation was that 230 (68.9%) of the respondents had a favorable attitude towards blood donation, whereas 104 (31.1%) had an unfavorable attitude. Among the total participants of graduating class students, only around one quarter, 85 (25.4%), have ever donated blood, and of these, 53 (62.4%) of donors had donated blood once in their lifetime, 19(22.4%), 9 (10.6%), and 4 (4.7%) of them donate blood twice, three times and four times, but no one donor donate blood either regularly or greater than four times. Satisfactorily, the majority of study participants, 263 (78.7%) of them, have had an interest in donating blood in the future [22].

A cross-sectional study was done on 346 undergraduate students on the Awada campus, Hawasa University. The majority (59.8%) of the study participants had good Knowledge. Of those, 230 (66.5%) had good Knowledge about infection transmission during blood transfusion, but 116 (33.5%) of the respondents had little Knowledge. Of the respondents, 165 (47.7%) stated that the minimum donation frequency was every three months, 70 (20.2%) every six months, 11 (3.2%) annually, and the remaining 61 (17.6%) were not aware of this.

In general, 288 (83.4%) of them said that blood donation is good, while 7 (2.02%) thought it is bad, and 51 (14.7%) had no idea. Similarly, 229 (66.2%) of the participants responded that voluntary blood donation is the best source of blood. About 217 (62.7%) of the respondents thought that an incentive should be given to donors, and 208 (60.12%) thought damage to a blood donor could occur during or after blood donation. Of the total respondents, 51 (14.7%) have donated blood at some time, of which 29 (56.9%) donated once, 13 (25.5%) donated twice and 8 (15.7%) donated three times. Two hundred and ninety-five (85.3%) had never donated blood in their lives [23].

A cross-sectional study was done on 427 health workers at the University of Gondar Hospital the result of the study showed in terms of Knowledge 49.8% of the participants were knowledgeable about blood donation.

The result of the study showed that about 218(51.6%) of the respondents had unfavorable attitudes. 142 (33.2%) of the respondents reported that they had donated their blood at least once. On the contrary, 63 (44.3%) of the participants replied that they had never donated at all. Eighty of the respondents (56.3%) who had ever donated blood replied that they felt comfortable after donating blood. Seventy-three (17.9%) of the total respondents said that one or more members of their family had received blood at least once [24].

A cross-sectional study was conducted on 384 (206 males and 178 females) students of Addis Ababa University, College of Health Sciences and Medicine in Ethiopia. Among the respondents, 83.7% and 16.4% have high and low levels of Knowledge, respectively. Among the respondents, 14.3% and 9.6% didn't know the age and weight limit required for blood donation, respectively.

Among the participants, 68% of them have a favorable attitude toward blood donation, and 32% have an unfavorable attitude toward blood donation. All of the participants are willing to donate in the future. More than one-third of students76.6%, 34.6% and 59.1% of respondents, believe that blood donation makes them weak, cause anemia and reduces immunity. Among the participants, 90(23.4%) of them have ever donated blood, and out of them, 38 of them were regular donors. Among those who didn't ever donate blood reported, 68.4% lacked information, 66.7% did not being asked, and 56% reported fear as a reason for not donating [25].

A cross-sectional descriptive study was conducted on 177 students from different colleges in Kathmandu, Nepal. Average Knowledge was about (32.4%).

There were varied opinions regarding blood donation among the students. About one-fourth of the students had no idea regarding most aspects of blood donation. More than half the students thought that blood collected during blood donation camps was sold by the blood bank to those needing blood transfusion.

Out of 177 students, 32 had donated before (18.1%), while 38 (21.5%) had taken part in organizing a blood donation camp. Twenty-two students donated only once, and one student had donated three times before. Most donors had donated at the age of 20 years [26].

### 2.2. Associated Factor

A comparative cross-sectional study was done on 424 ambulatory patient attendants at Arbaminch General Hospital. Males were 1.1 times more likely to donate blood than females. Youths and Young adults in the age group 15-24 years and in the age group 25-34 years were more likely to donate blood than older adults. Orthodox Christians were 1.29 times more likely to donate blood than other religious followers respectively. Rural residents were less likely to donate blood voluntarily than urban residents. Participants who completed secondary school and above were 1.32 times more likely to donate blood than illiterate ones, and participants with good Knowledge about blood donation were 1.6 times more likely to donate blood than those with poor Knowledge about blood donation [27].

A comparative cross-sectional study was done on 360 undergraduate students of Arsi University. The gender of the students was found to be a significant predictor. Accordingly, female Health Science students were 3.2 times more likely to have a better knowledge than male Health Science students. Female Health Science students were 65.7% less likely to donate blood than male Health Science students [20].

An institution-based cross-sectional study was conducted to assess KAP and the associated factors that contribute to VBD among 319 health science students of Samara University, Afar, Northeast Ethiopia. There was a significant association between the level of Knowledge of voluntary blood donation and a year of study and department. Being a department of Midwifery, I had an adequate level of Knowledge about voluntary blood donation. Increased years of study and exposure to mass media for information access increased the odds of respondents' level of Knowledge on VBD. Those who are not exposed to mass media for information access about blood donation are less likely to be knowledgeable than the exposed individuals.

There was a significant association between the level of Attitude of VBD and the department. A significantly higher proportion of study participants in the Department of Midwifery had favorable attitudes towards VBD compared to participants in the nursing department. Respondents who had inadequate Knowledge were 0.45 times less likely to have a favorable attitude toward VBD than those with adequate Knowledge. Nurses were 1.881 times more likely to practice VBD than health officers. From religion towards VBD, Muslims were found to be less likely to practice than Orthodox religious followers [21].

An institutional-based cross-sectional quantitative study was conducted among 346 Graduating Class Students of Assosa University. Inadequate Knowledge was 2.098 times having an unfavorable attitude towards VBD when compared to having adequate Knowledge. Also, Bing increased the age of respondents from 26 years to 35 years by 2.393 times, having an unfavorable attitude towards VBD compared with the age of 18 years to 25 years. A user of television is 2.015 times more likely to non-donors of blood than compared to non-users, but internet and radio/FM users didn't show a statistically significant association with VBD. When compared to the Knowledge and Attitude towards Practice, both have inadequate Knowledge 3.118 times non-donors and unfavorable Attitude 4.254 times no donors, which is compared to adequate Knowledge and favorable Attitude, respectively [22].

A cross-sectional study was done on 427 health workers of the University of Gondar Hospital, Participants whose family members had received blood were five times more likely to donate blood as compared to those whose family members had not received blood and those who were 25 years old were about two times more likely to donate blood than those who are 25 years old or less [24].

A cross sectional study was conducted on 384 (206 males and 178 females) students of Addis Ababa University, College of health sciences and Medicine in Ethiopia. The study revealed that there is significant association of level of blood donation with year of study and department of respondents.

Increased years of study and being students in the Department of Medicine and Nursing increased the odds of respondents' level of Knowledge on blood donation. Age≥25 years showed no association with the level of Knowledge. This was reversed in the multivariate analysis, as age≥25 years increased the odds of Knowledge [25].

A cross-sectional descriptive study was conducted on 177 students from different colleges in Kathmandu, Nepal. The percentage of donors among boys was much more than the percentage of donors among girls, being 31.5% and 8.7%, respectively. Expectedly, those students who participated in organizing blood donation camps were more likely to donate. There was no significant correlation between gender and level of Knowledge, with average knowledge scores among boys and girls Being comparable (8.40±4.06 And 8.44±2.92 respectively) (26).

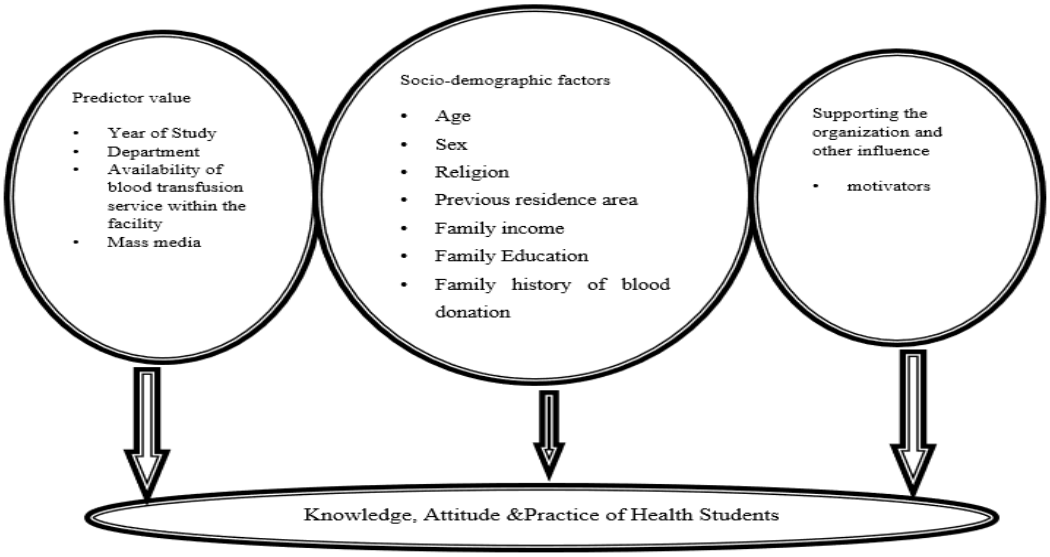


**Figure 1:** Conceptual framework of the associated factor for KAP of blood donation.

## 3. Objective of the study

3.1. General objective

- ✓ To assess Knowledge, Attitude, Practice of blood donation, and associated factors among undergraduate regular medicine and health science students of AMU CMHS.

3.2. specific objective

- ✓ To assess Knowledge of voluntary blood donation
- ✓ To assess Attitudes toward voluntary blood donation
- ✓ To assess the Practice of voluntary blood donation
- ✓ To assess factors affecting the Practice of voluntary blood donation among regular Medicine & health science students of AMU CMHS.

## 4. Methodology

### 4.1. Study area and period.

The study was conducted at AMU CMHS from June 21-30, 2022 G.C. Arbaminch University is found in Arbaminch Town, Gamo Zone, SNNPR, and Ethiopia.

Arbaminch University has two institutes, five colleges, and two schools: - institutes: Arbaminch Institute of Technology and Arbaminch Water Institute of Technology; five colleges: College of Medicine, College of Natural Science, College of Agriculture, College of Business and Economics, college social science and humanity and two schools: a school of law, school of pedagogical and behavioral science.

The regular program comprises undergraduate studies in the College of Medicine and Health Science by the Department of Medicine, public health, nursing, anesthesia, medical laboratory sciences, pharmacy, Midwifery, environmental health, health informatics, medical radiology, and 1st-year students.

Currently, there are a total of 1607 students (954 male and 653 female) are actively attending regular classes of 502 medical students, 156 public health, 141 nursing,62 anesthesia,130 medical laboratory sciences, 129 pharmacies,120 midwifery, 67 environmental health, 66 health informatics, 66 medical radiology, and 168 1st year students at a different level of study.

### 4.2. Study Design

The institution-based cross-sectional study design was used to assess the Knowledge, Attitude, and practice toward blood donation and associated factors among medicine and health science students at Arbaminch University CMHS.

### 4.3. Source population

The source population was all undergraduate Medicine and health science students at Arbaminch University CMHS.

### 4.4. Study Population

The study population was selected from undergraduate medicine and health science students currently studying at Arbaminch University CMHS.

#### 4.4.1 Inclusion

- All students above the age of 18 and who registered in the College to take this year's academic schedule.

#### 4.4.2 Exclusion

- Students who do not voluntarily participate.
- Mentally challenged student.
- Students who have Practice

### 4.5. Sample Size Determination

The sample size was determined by the following statistical formula

$$n = \frac{(z_{a/2})^2 (pq)}{d^2}$$

**Where:**

n = sample size

Zα/2 = Z value at (α = 0.05) = 1.96

p = Proportion of students who have Knowledge of blood donation.

q = Proportion of students who have no knowledge of blood donation.

d = Margin of error (Precision), (Usually < 0.05)

A reasonable estimate of the key Proportion was not previously studied, and it was taken as 50%.

- $n = \frac{(1{\cdot}96)^2 (0.5)(0.5)}{(0.05)^2} = 384$
- If the sample size is taken from less than 10000,
- Sample size=n/1+ (n/N). 384/1+384/1607=310.17
- Hence, sample size n will be 311.
- Assuming no respondent rate of 5%, the sample size is 327

### 4.6. Sampling technique

A simple random sampling method was employed for this study. We made a numbered list of all the students in the source population. Each student was numbered from 1 to N (where N is the size of the population). We selected the required number of students by lottery method.

### 4.7. Methods of data collection

Data was collected using a self-administered questionnaire using a structured, pre-tested English version questionnaire after ethical clearance and approval were obtained from Arbaminch University, and consent was obtained from those who met the inclusion criteria. It included questions on the socio-demographic characteristics of students and questions that assessed Knowledge, Attitude, and Practice regarding blood donation history and reasons for not donating blood previously.

### 4.8. Variables of the study

#### 4.8.1 Dependent variables

- Knowledge of blood donation
- Attitude of blood donation
- Practice of blood donation

#### 4.8.2 Independent Variable

- Age
- Sex
- Religion
- Previous residence area
- Year of Study
- Family income
- Family Education
- Family history of blood donation

### 4.9. Operational Definition

The level of Knowledge about blood donation was categorized after 29 questions were asked. Those respondents who scored greater than or equal to the mean for knowledge questions were considered knowledgeable but were not.

The Attitude toward blood donation was categorized after asking eight questions. Those respondents who scored greater than or equal to the mean for attitude questions were considered to have a good attitude; otherwise, they had a poor attitude.

Blood donation practice in this study was considered if the respondents had ever donated blood at least one time in life.

### 4.10. Data Analysis

Data was checked manually for completeness, and the data was analyzed by entering SPSS software version 25. The frequency and distribution of both dependent and independent variables were worked out by using a cross tab. Then, the data was analyzed using appropriate descriptive and inferential statistical tests. A binary logistic regression model was used to identify the factors affecting Practice concerning blood donation. Crude odds ratio (COR) and adjusted odd ratio (AOR) were declared at P-value<0.2 and <0.05, respectively.

Finally, appropriate tables, graphs, and percentages were displayed. Descriptive results were summarized and presented with tables.

### 4.11. Ethical consideration

Before the commencement of the study, ethical clearance was obtained from the College of Medicine and Health Science, Public Health Department of Arbaminch University. After permission was obtained, a support letter written by the university was submitted to all concerned bodies in the study sites. Informed verbal consent was obtained from the study participants. The objective of the study was explained. Confidentiality was maintained at all levels of the study by avoiding identifiers using codes to identify participants. Keeping the privacy of the study participants during data collection and locking the questionnaires securely. Every individual who took part in this research was treated as an autonomous agent.

Participants' information obtained from the questionnaire was kept confidential. Participants were also informed that participation is voluntary and that they could withdraw from the study at any stage if they desired

### 4.12. Disseminating Study Results

A copy of this study's findings will be submitted to the School of Public Health, College of Medicine and Health Science of Arbaminch University. The findings of the research will also be presented to our advisor and fellow students. Another copy will also be given to Arbaminch University College Medicine and Health Science Library to be accessed by interested individuals. If possible, to be published in journals.

## 5. Result

### 5.1 Socio-demographic characteristics

A total of 315 Arba Minch University CMHS undergraduate students responded to the questionnaire with a response rate of 96%. The majority of the study participants 258(81.9%) were within the age range of 20-24 with a mean age of 22.57±1.631. 172(54.6%) of the respondents were males. Moreover 309(98.1%), and 165(52.4%) of the respondents were single by marital status, and orthodox Christian by religion respectively (Table 1).

**Table 1** socio-demographic characteristics of AMU CMHS students, Ethiopia, June 21– 30, 2022.

| Variable | Frequency (%) |
|---|---|
| Age | |
| <20 | 23(7.3) |
| 20-24 | 258(81.9) |
| >=25 | 34(10.8) |
| Sex | |
| Male | 172(54.6) |
| Female | 143(45.4) |
| Marital status | |
| Single | 309(98.1) |
| Married | 6(1.9) |
| Religion | |
| Orthodox | 165(52.4) |
| Protestant | 84(26.7) |
| Muslim | 56(17.8) |

| | |
|---|---|
| Others* | 10(3.2) |
| Study department | |
| Medicine<br>1st year | 118(37.5)<br>24(7.6) |
| Public health | 32(10.1) |
| Nursing<br>Medical laboratory | 27(8.6)<br>24(7.6) |
| Pharmacy | 24(7.6) |
| Midwifery | 22(6.9) |
| Environmental Health<br>Health informatics<br>Radiology | 9(2.9)<br>15(4.76)<br>12(3.8) |
| Anesthesia | 7(2.2) |
| Area of residence | |
| Urban | 249(79.0) |
| Rural | 66(21.0) |
| Mother Occupation | |
| Teacher | 23(7.3) |
| Health profession | 37(11.7) |
| Other** | 255(81.0) |
| Fathers occupation | |
| Teacher | 51(16.2) |
| Health profession | 30(9.5) |
| Other** | 234(74.3) |
| Mother's educational status | |
| Illiterate | 42(13.3) |
| Primary | 31(9.8) |
| Secondary | 62(19.7) |
| Technical/vocational | 20(6.3) |
| Higher(college/university) | 160(50.8) |
| Father's educational status | |
| Illiterate | 23(7.3) |
| Primary | 34(10.8) |
| Secondary | 44(14.0) |
| Technical | 19(6.0) |
| Higher | 194(61.6) |
| Transfused family member(relative) | |
| Yes | 76(24.1) |
| No | 239(75.9) |
| Family members donated blood before | |
| Yes | 164(52.1) |
| No | 151(47.9) |
| Family monthly income | |
| <2000 | 33(10.5) |
| 2000-6000 | 82(26.0) |
| >6000 | 200(63.5) |
| *Adventist, Atheist,<br>**Farmer, Businessman/women, Government worker, Daily worker, Housewives | |

**5.2. Level of Knowledge on Blood Donation**

Out of the total study participants, 154(49.2%) were found to be knowledgeable, whereas 159(50.8%) were found to be less knowledgeable. The majority, 175(55.6%) and 229(72.7%) of the study participants didn't know how many lives a single pint of donated blood can save and after how long the body will replace the lost blood respectively and the majority, 217 (68.9%) and 265 (84.1%) knew how many liters of blood a person donates at a time and how often a person can donate in a year respectively (table 2).

**Table 2**: level of Knowledge about blood donation among health science students of AMU CMHS, Ethiopia, June 21-30, 2022.

| Characters | Frequency (%) |
|---|---|
| Is blood donation harmful to donors? | |
| Yes | 19(6.0) |
| No | 296(94.0) |
| Do you know your blood group? | |
| Yes | 179(56.8) |
| No | 136(43.2) |
| Above what age is blood donation recommended? | |
| Above ten years | 16(5.1) |
| Above 18 years | 265(84.1) |
| Above 25 years | 15(4.8) |
| No age limit | 19(6) |
| Above what age blood donation is not recommended | |
| Above 50 years | 54(17.1) |
| Above 60 years | 110(34.9) |
| Above 70 years | 95(30.2) |
| No age limit | 56(17.8) |
| How often can a person donate blood in a year? | |
| Every month | 13(4.1) |
| Every three month | 265(84.1) |
| Every six month | 21(6.7) |
| Once a year | 16(5.1) |
| Which body coordinates blood donation in Ethiopia | |
| Health center | 250(7.9) |
| Private clinics | 3(1) |
| Hospitals | 16(5.1) |
| Red Cross | 271(86.0) |
| What do you think are the side effects of donating blood | |
| Anemia | 110(34.9) |
| Loss of consciousness | 73(23.2) |
| Wight loss | 4(4.3) |
| Death | 2(0.6) |
| No side effect | 109(34.6) |
| Others* | 17(5.4) |
| What disease can be transmitted by transfusion? | |
| HBV | 161(51.1) |
| HCV | 84(26.7) |
| Malaria | 21(6.7) |
| TB | 6(1.9) |
| Others** | 17(5.4) |
| Do not know | 26(8.3) |
| How many liters of blood can a person donate at a time? | |
| Less than 350 | 74(23.5) |
| 350-450 | 217(68.9) |
| Greater than 450 | 4(1.3) |
| Do not know | 20(6.3) |
| How many lives can a single pint of blood save | |
| One life | 175(55.6) |
| Two life | 140(44.4) |
| Can women Female during menstruation donate blood? | |
| Yes | 74(23.5) |
| No | 241(76.5) |
| Can pregnant women donate blood? | |
| Yes | 29(9.2) |
| No | 286(90.8) |
| Can cigarette smokers donate blood? | |
| Yes | 150(47.6) |
| No | 165(52.4) |
| A person can be infected by receiving a blood transfusion | |
| Yes | 218(69.2) |

| | |
|---|---|
| No | |
| A person can be infected by a blood transfusion. | |
| Yes | 56(17.8) |
| No | 259(82.2) |
| Can a person donate when BP is low | |
| Yes | 24(7.6) |
| No | 291(92.4) |
| Can a person donate when BP is high | |
| Yes | 87(27.6) |
| No | 228(72.4) |
| Can an infected person donate | |
| Yes | 56(17.8) |
| No | 259(82.2) |
| What is the best source of blood donor | |
| Voluntary | 251(79.7) |
| Replacement | 33(1.0.5) |
| Remunerated | 0 |
| Don't know | 31(9.8) |
| Do all surgical procedure requires blood transfusion | |
| Yes | 56(17.8) |
| No | 259(82.2) |
| Can females and males donate equal amounts of blood | |
| Yes | 134(42.5) |
| No | 181(57.5) |
| Cal-eligible slim and plus-sized donors donate equal volumes of blood | |
| Yes | 148(47.0) |
| No | 167(53,0) |
| Who benefits from blood donation | |
| Mothers giving birth | 184(58.4) |
| Newborns | 25(7.9) |
| Victims of car accident | 101(32.1) |
| Others*** | 5(1.6) |
| How long after donating blood will the body replace the lost blood | |
| Within few hours | 46(14.6) |
| Within days | 86(27.3) |
| Within months | 179(56.8) |
| Within year | 3(1) |
| Lost blood will not be replaced | 1(0.3) |
| Cut off weight to donate blood | |
| 30 KG | 27(8.6) |
| 50 KG | 268(85.1) |
| 60KG | 12(3.8) |
| No weight limit | 8(2.5) |
| What do you think a donor should do before donating blood? | |
| Eat till satiety | 61(19.4) |
| Drink water | 179(56.8) |
| Should do nothing | 75(23.8) |
| Where do you think a person can donate blood | |
| In any health center | 105(33.3) |
| In any clinic | 39(39.4) |
| In place specifically organized for this activity | 171(54.3) |
| What do you think a person a person should do soon after donating blood | |
| Eat and drink immediately | 103(32.7) |
| Sleep | 11(3.5) |
| Rest | 182(57.8) |
| Can do anything | 19(6.0) |
| How many people in Ethiopia do you think to donate blood | |
| Very high | 6(1.9) |
| High | 10(3.2) |

| | |
|---|---|
| Moderate | 120(38.1) |
| Low | 138(43.8) |
| Very low | 41(13.0) |
| To whom do you think blood can be donated | |
| Only family members | 23(7.3) |
| Only to nonfamily members | 1(0.3) |
| To anyone | 291(92.3) |
| *shock, injection pain, bleeding<br>**leishmaniasis,<br>*** Anemia, bleeding | |

**5.3. Attitude towards blood donation**

Three hundred and four (96.5%) respondents said blood donation is good. Voluntary donations were accepted as the best source of donors by 278(88.3%). 26(8.3%) said donating blood harms the donor. Of the total respondents, 169(53.7%) have a favorable attitude towards blood donation. The mean attitude score of the participants was 6.30± 1.464. Table 3 shows the respondents' detailed attitude level regarding blood donation

**Table 3** Attitude towards blood donation among health science students of AMU CMHS, Ethiopia, June 21-30, 2022.

| Characters | Frequency (%) |
|---|---|
| Do you think that blood donation is a good and noble act? | |
| Agree | 304(96.5%) |
| Neutral | 3(1%) |
| Disagree | 8(2.5%) |
| All healthy individuals have a moral duty to donate blood. | |
| Agree | 247(98.4%) |
| Neutral | 47(14.9%) |
| Disagree | 21(6.7%) |
| Blood donation harms the health of blood donators | |
| Agree | 26(8.3%) |
| Neutral | 71(22.5%) |
| Disagree | 218(69.2%) |
| Blood donors should always disclose correct information about his/her health before donating blood | |
| Agree | 263(83.5%) |
| Neutral | 21(6.7%) |
| Disagree | 31(9.8%) |
| Are you willing to donate blood for any unknown mother in emergency care in need of blood | |
| Agree | 269(82.4%) |
| Neutral | 28(8.9%) |
| Disagree | 18(5.7%) |
| Voluntary blood donors are the best source of blood | |
| Agree | 278(88.3%) |
| Neutral | 29(9.2%) |
| Disagree | 8(2.5%) |
| Blood donors should receive any benefit in exchange | |
| Agree | 53(16.8%) |
| Neutral | 83(26.3%) |
| Disagree | 179(56.8%) |
| Do you think that blood is sold by blood banks to patients? | |
| Agree | 93(29.5%) |
| Neutral | 77(24.4%) |
| Disagree | 145(46.1%) |

**5.4. Practice of blood donation**

One hundred thirty-six (43.2%) have donated, with 55 (40.6%) one time, 56 (41.2%) two times and 20(14.7%), and 5(3.7%) donated three and four times, respectively. Most, 92(29.2%), donated for moral satisfaction and altruism. One hundred seventy-nine (56.8%) had never donated blood in their lifetime. Reasons for non-donation included 72.9 (22.9%) fear of blood donation, 69(21.9%) unfit to donate, and 8(2.5%) lack of information. Table 4 shows details of blood donation practice among health science students.

**Table 4**: Practice of blood donation among health science students of AMU CMHS, Ethiopia, June 21-30, 2022.

| Characters | Frequency (%) |
|---|---|
| Have you ever donated blood before? | |
| Yes | 136(43.2%) |
| No | 179(56.8%) |
| How many times | |
| One time | 55(40.4%) |
| Two times | 56(41.2%) |
| Three times | 20(14.7%) |
| Four times | 5(3.7%) |
| What promoted you? | |
| A sick person needed | 15(4.8%) |
| Moral satisfaction and altruism | 92(29.2%) |
| For free health check-up | 6(6.7%) |
| Motivated by friends | 23(7.3%) |
| What was the reason not to donate? | |
| I have no information | 8(2.5%) |
| Fear of blood donation | 72(22.9%) |
| Medically unfit | 69(21.9%) |
| Others* | 30(9.5%) |
| *Religious forbid, donated blood may be sold, need for payment. | |

**Table 5 medical related problems.**

| Characters | Frequency (%) |
|---|---|
| Have you ever been deferred from donating blood due to a medical problem? | |
| Yes | 59(16.2%) |
| No | 256(81.3%) |
| For how long have you deferred? | |
| Temporary | 51(16.2%) |
| Permanent | 9(2.9%) |

**5.5. Factor affects the Practice of Blood Donation**

This study revealed that the level of Practice towards blood donation among AMU CMHS students' age, marital status, religion, and mother occupation didn't show any significance in bivariate analysis (p-value >0.2) and wasn't included in the multivariate analysis. Also, sex, mothers' and fathers' educational status, transfused family members, and family income show significant association in bivariate but not in multivariate analysis.

Using the multiple logistic regression analysis (table 6), factors significantly predictive of the level of Practice of blood donation of students included:-. This study also identified that the study participants whose fathers were teachers were 3.7 times more practiced than those in other occupations. This study revealed that the study participants who came from rural areas were found to be 50% less practiced than those from urban areas. This study revealed that the study participants whose family members have ever donated blood were found to have 2.9 times more good practices as compared to those participants whose family members have never donated blood.

**Table 6:** Factors Associated with Practice towards blood donation (P<0.05), Ethiopia, June 21-30, 2022.

| **Practice on blood donation versus socio-demographic characteristics of study participants** | | | | |
|---|---|---|---|---|
| **Variables** | **Less Practice (%)** | **Good Practice (%)** | **Crude OR (95% CI)** | **Adjusted OR (95% CI)** |
| **Sex** | | | | |
| Male | 95(59.7) | 75(48.7) | R | R |
| Female | 64(40.3) | 79(51.3) | 1.56(0.99-2.44) | 1.36(0.76-2.44) |
| **Father occupation** | | | | |
| Teacher | 32(20.1) | 19(12.3) | 0.508(0.272-0.94) | 3.7(1.6-8.22)*** |
| Health profession | 20(12.6) | 10(6.5) | 0.428(0.19-0.95) | 3.64(1.23-10.76) |
| Other | 107(67.3) | 125(81.2) | R | R |
| **Area of residence** | | | | |
| Urban | 111(69.8%) | 136(88.3%) | R | R |
| Rural | 48(32.2%) | 18(11.7%) | 3.267(1.79-5.93) | 0.437(0.19-0.97)*** |
| **Mother educational status** | | | | |
| Not attended | 24(15.1%) | 18(11.7%) | | |
| Primary | 18(11.3%) | 13(8.4%) | 0.75(0.37-1.48) | 0.48(0.10-2.30) |
| Secondary | 24(15.1%) | 36(23.4%) | 0.72(0.33-1.57) | 0.55(0.22-1.4) |

| | | | | |
|---|---|---|---|---|
| Technical | 13(8.2%) | 7(4.5%) | 1.5(0.82-2.74) | 1.18(0.29-4.8) |
| Higher | 80(50.3%) | 80(51.9%) | R | R |
| **Father educational status** | | | | |
| Not attended | 15(9.4%) | 9(5.8%) | | |
| Primary | 22(13.8%) | 12(7.8%) | 0.51(0.21-1.2) | 3.12(0.70-13.83) |
| Secondary | 23(14.55) | 21(13.6%) | 0.47(0.22-1.00) | 2.82(0.98-8.14) |
| Technical | 10(6.3%) | 9(5.8%) | 0.78(0.40-1.52) | 1.358(0.37-4.89) |
| Higher | 89(56.0%) | 103(66.9%) | R | R |
| **Transfused family member** | | | | |
| Yes | 30(18.9) | 46(29.9) | 1.831(1.08-3.10) | 0.846(0.43-1.66) |
| No | 129(81.1) | 108(70.1) | R | R |
| **Family member donated** | | | | |
| Yes | 62(39.0) | 100(64.9) | 0.358(0.19-0.65) | 2.89(1.83-4.58)*** |
| No | 97(61.0) | 54(35.1) | R | R |
| **Monthly income** | | | | |
| <2000 | 21(13.2) | 12(7.8) | 0.48(0.22-1.04) | 1.26(0.41-3.84) |
| 2000-6000 | 46(28.9) | 34(22.1) | 0.63(0.37-1.06) | 1.77(0.87-3.59) |
| >6000 | 92(57.9) | 108(70.1) | R | R |

## 6. Discussion

Sustaining the necessary level of blood supply is the core concern of many organizations working on health care facilities. For this reason, identifying the level of Knowledge, Attitude, and Practice is crucial. An attempt was made to assess the Knowledge, Attitude, and Practice regarding blood donation and associated factors among AMU CMHS students.

This study showed that 154(49.2%) were knowledgeable about blood donation. This is comparable with a study conducted at Asossa University (48.2%) (22) and Gondar University (49.8%) (24). However, the finding is lower than the study done at Hawassa University (59.8%) (23), Arsi (79.4%) (20), and Addis Ababa University (83.7%) (25) And higher than the study done by College of Kathmandu, Nepal (32.4%) (26). the possible reason for the variation might be attributed to the differences in socio-demographics and access to learning opportunities on the importance of blood donation.

This study also revealed that nearly 53.7% of the participants had a favorable attitude towards blood donation. The finding is lower than the studies conducted in Samara (65.8%), Assosa (68.9%), and Addis Ababa (68%). However, the finding is higher than the study conducted in Gondar (51.6%) and Arsi (46.7%). This difference might occur due to socio-cultural differences and educational attributes between the respondents. This indicates the importance of incorporating blood donation into the Health Sciences Curricula.

This study showed that 43.2% of undergraduate Health Science students had ever donated blood. This is higher than studies conducted in Hawassa (14.7%), Nepal (18.1%), Addis Ababa (23.4%), Samara (24.5%), Arsi (27.2%), and Gondar (33.2%). However, this finding is lower than study conducted in Assosa (62.4%). These differences might be due promotional effect of the blood banks and other social institutions regarding the importance of blood donation.

In this study, of the participants who had good Attitudes, 60.1%of them were knowledgeable about blood donation; however, from those who had no good attitudes, only 37% were knowledgeable. It also showed that of the participants who had Practice in blood donation, 62% of them were found to be knowledgeable, while for those who had no practice, only 39.7% were knowledgeable. Of the participants who had Practiced blood donation, 55.3% of them were found to have a good attitude toward blood donation, while those who had no practice, 51.4% of them had a good Attitude. The main reasons that the 7.

study participants reported for not donating blood were fear of blood donation 22.9%, medically unfit 21.9%, and no information 8(2.5%). A similar study conducted at the University of Gonder showed 31.8% fear of blood donation and no information (24.3%), not being asked to donate 22.8%. Addis Ababa University medically unfit 49(16.6%), fear of pain 22(7.5%), lack of information (32.5%).

## 7. Strength and Limitation

It involved all undergraduate health science students from different departments, with a 96% response rate. We used primary data and completed such a large research in a short time frame.

There was no adequate time to do a detailed investigation. One of the limitations of this study comes from the fact that the cross-sectional nature of the study limits the study from showing causal association. The lack of literature in our study area was one of the limitations in comparing the findings.

## 8. Conclusion

In this study, more than half of the study participants had a good attitude toward blood donation. However, the level of Knowledge was inadequate. Study department, father's occupation, and family member ever donated blood, and living in urban were associated with being knowledgeable. Comparably, the participants had poor Practice. Therefore, the findings of this study suggest that Knowledge does not necessarily lead to actual blood donation practice.

## 9. Recommendation

Based on the findings of the study, the following recommendations are made:

1. AMU CMHS should establish blood donation clubs.
2. CMHS should prepare informative leaflets, banners, and seminars about blood donation
3. AMU CMHS should work in collaboration with the Ethiopian Red Cross Society to improve the low level of blood donors.
4. The College, hospitals, and departments should intervene in activities to bring about behavioral changes among health science students regarding the wider benefit of blood donation for donors and the community.
5. AMU College of Medicine and Health Science should prepare programs to invite regular blood donors for motivational speeches.
6. Further study needs to be conducted to explore factors associated with blood donors.

**Abbreviation and acronyms.**

| | |
|---|---|
| AMU | Arbaminch University |
| BD | Blood Donation |
| CDC | Centers for Disease Control and Prevention |
| CI | Confidence interval |
| CMHS | College of Medicine and Health Science |
| EDHS | Ethiopian Demographic and Health Survey |
| FMOH | Federal Ministry of Health |
| HCV | Hepatitis C virus |
| HBV | Hepatitis B virus |
| KAP | Knowledge, Attitude, and Practice |
| NBB | National Blood Bank |
| NBTS | National Blood Transfusion Service |
| SPSS | Statistical Package for Social Sciences |
| WHO | World health organ |

## Reference


1. Tadesse W, Ayalew Y, Yisma E, Liben ML, Wudu M. Knowledge, Attitude, Practice and Associated Factors towards Voluntary Blood Donation among Regular Health Science Students of Samara University, Ethiopia. Health Sci J. 2018;12.
2. Melku M, Terefe B, Asrie F, Enawgaw B, Melak T, Tsegay YG, et al. Knowledge, Attitude, and Practice of Adult Population towards Blood Donation in Gondar Town, Northwest Ethiopia: a community-based cross-sectional Study. J Blood Transfus. 2016; 2016:1-10.
3. ENSA. About 40% of Ethiopian Mothers Die because of Lack of Enough Blood Donors. Cantabria, Spain: ENSA; 2014.
4. WHO. Ethiopia Commences World Blood Donor Day 2014 Celebrations. Geneva, Switzerland: WHO; 2014.
5. Schreiber GB, Schlumpf KS, Glynn SA, Wright DJ, Tu Y, King MR, et al. Convenience, the bane of our existence, and other barriers to donating. Transfusion. 2006;46(4):545–53.
6. Dejen, Ambaye. Knowledge, Attitude, Practice and Associated Factors of Blood Donation among Health care workers in TikurAnbessa Specialized Hospital, Addis Ababa, Ethiopia. Diss. Addis Ababa University, 2015.
7. Mrigendral A. Study on Knowledge, Attitude and Practice of Blood Donation among Students of Different Colleges of Kathmandu, Nepal.International Journal of Pharmaceutical &Biological Archives. 2013;;4(3):424-28..
8. Yerpude PN, Jordan KS. A cross-section study on KAP on blood donation Among medical students South India. Int J Med health Sci.2013;2(4):382-5.
9. Agrwwa A, TiwariA, Ahuja A. KAP of people toward voluntary blood donation in uttarakhand, Asian. J Transfus, Sci. 2013;7(1):59-62.
10. Manikandan.S, Srikumar R, Ruvanthika PN. A study on KAP on blood donation Among health profession students in Chennai, Tamil's ado, south India. International scientific and research publication. 2013;3(3):2-4.
11. Karim AM, Admassu K, Schellenberg J, et al.Effect of Ethiopia's health extension program on maternal and newborn health care practices in 101 rural districts: a dose-response study. PloS one.2013:8(6): e65160.
12. WHO. Safety WB, Availability-Fact sheet N. 279. 2014. Available at: http://www.searo.who.int/thailand/factsheets/fs002 9/en/. Accessed January 10, 2017.
13. AbolfotouhA, Al-Assiri MH, Al-Omani M, Al Johar A, Al Hakbani AS, Alaskar AS. Public awareness of blood donation in Central Saudi Arabia. Int J Gen Med. 2014; 7:401.
14. wikipedia. Blood donation. [cited 2014 November,26]; Available from: http://www.en.wikipedia.org/wiki/blood donation.
15. J.B.Tapko BT, Luis G.Sambo. Status of blood safety in the WHO African regional report of the 2010 survey,who regional office for Africa, Brazaville,congo 2014.
16. Ethiopia: Blood Donation, Its Use and Means to Do (https://allafrica.com/stories/201509110975.html)
17. WHO. Towards 100% voluntary blood donation: a global framework for action. 2010.
18. WHO. Blood Safety and Availability [cited 2014]; Available from: http://www.who.int/topics/blood safety/en/.
19. WHO. Blood donation safety report. 2006; 92:14-7.
20. Habtom Woldeab Gebresilase1, Robera Olana Fite2* and Sileshi Garoma Abeya3. Knowledge, Attitude and Practice of students towards blood donation at Arsi University and Adama Science and Technology University. BMC Hematology.2017.
21. Woldemichael Tadesse1, Yohannes Ayalew2, Engida Yisma2, Misgan Legesse Liben3* and Mesfin Wudu4. Knowledge, Attitude, Practice and Associated Factors towards Voluntary Blood donation among Regular Health Science Students of Samara University,Ethiopia. Health science journal.2018.
22. *Birhanu Ayenew Anleye1 and Mulugeta Admasu Adulla* Knowledge, Attitude, Practices, and Factors Associated with Voluntary Blood Donation among Graduating Class Students of Assosa University, Benishangul Gumuz, Ethiopia, 2018. International Journal of Internal and Emergency Medicine.2020.
23. TsegayeShamebo*, ChalachewGedebo, MihretabDamtew, TakelWoldegeorgis, Elisabeth Girma, DanielTerefe, Assessment of Knowledge, Attitude and Practice of Voluntary Blood Donation among Undergraduate Students in Awada Campus, Hawassa University, Southern Ethiopia. Journal of Blood Disorders & Transfusion,2020
24. GetachewArage, Seada Ibrahim and Endeshaw Adimasu. Blood donation practice and its associated factors among health professionals of the University of Gondar Hospital, Northwest Ethiopia.2017.

25. Chalachew Misganaw MT, Andualem Deresea, Megdelawit Tesfaye,Tesfalem Teshome Tessema,Hawult Taye. THE LEVEL AND ASSOCIATED FACTORS OF KNOWLEDGE, ATTITUDE AND PRACTICE OF BLOOD DONATION AMONG HEALTH SCIENCE STUDENTS OF ADDIS ABABA UNIVERSITY. International Journal of Medical and Health Sciences Research. 2014;1(10):105-18
26. Mrigendral A. Study on Knowledge, Attitude and Practice of Blood Donation among Students of Different Colleges of Kathmandu, Nepal.International Journal of Pharmaceutical &Biological Archives. 2013;4(3):424-28.
27. Mende Mensa and Bereket Bassa. study on Prevalence and predictors of Voluntary Blood Donation Among Adult Ambulatory Patient Attendants at Arbaminch General Hospital, Southern Ethiopia. Journal of Hematology & Transfusion. 2017; 5(1):1060.