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Research Article

## Knowledge, Attitude, Practice and Associated Factors of Adult Population towards Blood Donation in Jigjiga Town, Somali Region, Ethiopia

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### Abstract

**Background:** Secure supply of safe blood components, based on voluntary, non-remunerated blood donation, is an important national goal to prevent blood shortages. Nowadays, in many low- and middle-income countries, blood supply is critically inadequate. Sub-Saharan Africa, which has the highest maternal mortality rate in the world of 510 deaths per 100000 live births, also has the lowest blood donation rates. The donated blood plays a big role during surgery, accident, delivery cases and in many bleeding cases.

The aim of this work is to assess knowledge, attitude, and practice and associated factors of adult population towards blood donation in Jigjiga town, Eastern Ethiopia, 2019. A total of 20 kebeles, six was selected by simple random sampling. The sample size was calculated by using EPI info version 7.2 by considering power of 80%, confidence level of 95%, by taking the comprehensive knowledge of the study Participants towards voluntary blood donation of 43.5% from study conducted in Harar town, giving total sample size of 416. Data was entered to EPI DATA version 3.1.0 and then exported to and analysis using SPSS version 22. Descriptive statistics was used then bivariate and multivariate logistic regression model was employed to determine the significance.

**Result:** About 249(61.2%), 318 (78.1%), and 77 (18.9%) study participants had adequate knowledge, good attitude and experience of blood donation. Those who were in college and higher education were 2.034 higher odds of knowledge towards blood donation relative to those in secondary and primary education. Study participants who were government employees and daily workers were 2.259(1.103, 4.629) times more knowledgeable to housewife, students. Study participants age range between 18-30 have less knowledge towards blood donation 0.408 times. Participants who attended college and higher education were more likely to have good attitude towards blood donation. Those respondents who are college and higher education and secondary were 2.450 times more likely, 2.359 to have good attitude towards blood donation compared to primary school 2.161 respectively. Participant's sex, education, and occupational status were found to be significantly associated with practice of blood donation. Being NGO worker is more likely to donate blood 8.167 higher than others. Male participants was more vulnerable to donate blood 5.245 times higher than female for blood donation. In addition to this, those respondents who are graduated college and higher education were more likely to donate blood than others 3.247.

**Keywords:** Knowledge, Attitude, Practice, Blood Donation, JigjigaTown, Ethiopia

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### Abbreviations

WHO	World Health Organization	HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
VBD	Voluntary Blood Donation	HBV	Hepatitis B virus
KAP	Knowledge Attitude Practices	HCV	Hepatitis C virus
PI	Principal Investigator		

## BACKGROUND

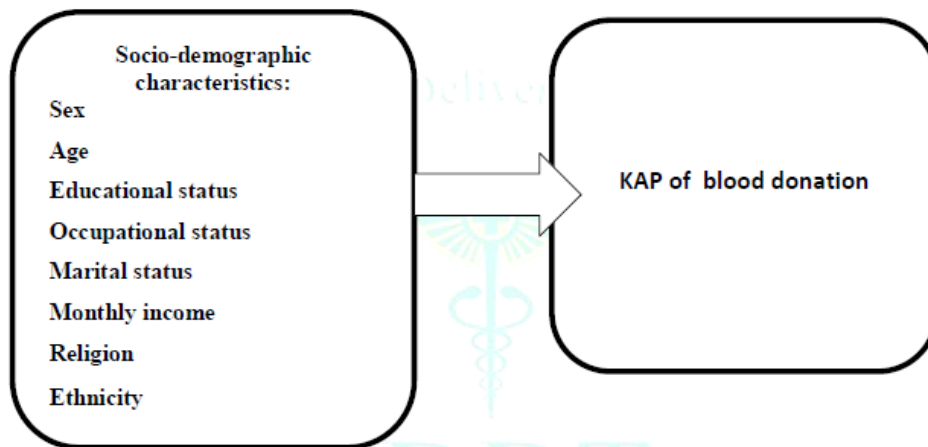
Blood transfusion is the transfer of blood or blood components from the donor into the bloodstream of the recipient. In both routine and emergency blood donation is a life-saving approach<sup>1,2</sup>. Blood loss may be due to varying serious conditions such as road traffic accidents, obstetric and gynecological hemorrhages, surgery, long-term therapies as well as anemia of medical or hematologic conditions or cancer and so blood transfusion is considered as a fundamental and essential element of the health care system<sup>3</sup>. The donated blood can be life-saving for those who have lost a large amount of blood due to serious accidents, anaemic patients or persons with very low platelet counts and certain hematological disorders such as leukemia<sup>4</sup>. The use of stored blood started during World War 1 (1914-1919), but the first large scale blood bank was not established during that time until 1947, in Chicago<sup>5</sup>. The Canadian surgeon, Major L.B Robertson, serving in Canadian Army Medical Corps in the first World War was responsible for introducing blood transfusion in the management of war injuries in the British Army. Blood transfusion was generally accepted as the medical treatment of choice for severe blood loss by the end of the war<sup>6</sup>. All donated blood was tested for diseases<sup>7</sup>. The World Health Organization (WHO) recommends that all countries should focus on young people to achieve 100% of nonremunerated voluntary blood donation by 2020<sup>8</sup>. According to WHO 2011 report 107 million blood donations were collected globally, half of these were collected in high-income countries, home to 15% of the world's population. In high-income countries, middle-income countries and low-income countries the blood donation rate was 49.2, 12.5, and 4.0 donations per 1000 population, respectively. In low-income countries, up to 15% of blood transfusions are given to children less than five years of age, in high-income countries, patients above 65 years of age, are mostly transfused, which comes up to 76% of all transfusions<sup>9</sup>. About 234 million major operations are performed world wide every year; 63 million people undergo surgery for traumatic injuries, 31 million for treating cancers, 10 million for pregnancy-related complications for which blood transfusion is mandatory<sup>10</sup>. The national requirement for blood in Ethiopia is between 80,000 and 120,000 units per year, but only 44% is collected<sup>11</sup>. The World Health Organization (WHO) mentions that blood donation by 1% of the total population are generally the minimum needed to meet a nation's most basic blood requirements<sup>12</sup>.

Globally, there is a shortage of blood supply due to high blood demand and increase in medical treatment procedures requiring blood transfusion therapy particularly in developing countries. Maintaining an adequate and safe blood supply is an issue of concern to health planners, especially with increase in demand. Therefore, understanding level of knowledge, attitude, practice, and associated factors towards blood donation is essential. The prevalence of blood donation was less than satisfactory due to misconceptions, poor knowledge, and unfavourable attitude, prevalence of adequate knowledge towards blood donation was seen to be 60% in developing countries, blood donation rate in low-income countries considerably less than that in middle- and high-income countries<sup>13,14</sup>. Globally yearly analysis showed that around 92 million unit blood

donations were collected from all types of blood donors, the lowest levels of availability are seen in low and middle income countries, especially in Africa<sup>15</sup>. Worldwide people from all age groups require blood donation to support continuity of life and improve the life quality<sup>16</sup>. Worldwide practices of blood donation are increasing but still it is a big concern for many countries. Blood which is safe prevents blood born infections from the donor to the recipient. Blood donation rates in Africa accounts to 5/1000 populations compared with developed countries for instance in USA it is 47/1000<sup>17</sup>. In Sub-Saharan African countries, there is a high need for blood transfusions due to maternal morbidity, malnutrition and communicable diseases such as malaria<sup>18</sup>. About 44% of maternal deaths in Africa are due to severe bleeding during and after childbirth<sup>19</sup>. There has been gross insufficient in access to blood safety in WHO's African region<sup>20,21</sup>. Bleeding can be caused by accidents, medical procedures or major surgery and pregnancy related complications. About 495,000 women die from bleeding associated with pregnancy and childbirth, which needs early medical attention<sup>22</sup>.

Blood donation is included as the main aspect of the preventive and therapeutic component of the health care<sup>23</sup>. Donor eligibility, negative attitude and lack of education lead to blood shortage in various facilities<sup>24</sup>. In developing countries, the community gets around 40% of the blood banks supply and out of this, 60% is collected from paid blood source<sup>25</sup>. People think that they may develop complications from donating blood, a major misconception underlying the practice<sup>26</sup>. Annually, ~25%–40% of Ethiopian mothers die due to lack of enough blood from donors<sup>27</sup>, making available safe blood at all health care centres reduces maternal death, which assures that the lives of every mother will not be in danger in case of emergencies for lack of blood<sup>28</sup>. The need for blood and blood products is increasing in all parts of the world<sup>29,30</sup>. Despite the fact that the country's annual demand of blood was 250,000 units, the amount of blood collected from donors by 2014 was 88,000 units<sup>31</sup>. In Ethiopia, an integrated strategy for voluntary blood donation and recruiting a sufficient number of safe blood donors are major challenges<sup>32</sup>. The people in the developing countries have 60% of adequate knowledge towards blood donation, and blood donation rate in low-income, middle-income, and high-income countries are 4.9, 46.8 and 11.7 per 1000 population, respectively<sup>33,34</sup>. On average, high income countries have 9 times higher donation rate compared to low income countries<sup>35</sup>. In Ethiopia Only 22% of blood is donated by VBD (voluntary blood donation); the country is classified among countries that have least number of VBD (Group C, countries with <50% VBD). Voluntary, non-remunerated blood donations are the cornerstone of an adequate supply of blood and blood components<sup>36,37</sup>. Thus, the objective of this research will be to assess knowledge, attitude, and practice and associated risk factors towards blood donation among adult population in Jigjiga town, Eastern Ethiopia. Furthermore, no previous study conducted in Somali regional state as whole and particularly in Jigjiga town. This study tried to come up with the following major finding that fills the existing information gap on the level of knowledge, attitude, practice and associated factors towards blood donation by adult population of Jigjiga town (figure 1).

## Conceptual frame work



**Figure 1: Conceptual framework of the KAP and associated factors of blood donation.**

Source: Adapted from, after reading different articles and Ghana University, Legon, 2017

The aim of this work was to assess knowledge, attitude, practice and associated factors of adult population towards blood donation in jigjiga town Somali region, Ethiopia, 2019 with specific objectives as

- To assess the knowledge of blood donation among adult population in Jigjiga town.
- To assess attitude towards blood donation among adult population in Jigjiga town.
- To assess practice of blood donation among adult population in Jigjiga town.
- To determine associated factors of knowledge, attitude and practice of blood donation.

## METHODS

### Study area

The study was conducted in jigjiga town which is the capital city of Somali regional state. Jigjiga is located south eastern of Ethiopia. It is situated at a distance of 628 km away from Addis Ababa. It is 110 North latitude and 400 and 480 East longitude; the altitude of the town ranges from 200 to 1000 meters above sea level. The total population of the town is 967652 out of this 526497 are male and 441254 are female where 96.86% are Muslims. The town has one referral hospital, one regional hospital and two health centers respectively, unfortunately there is no blood bank in each regional and referral hospital, except one blood bank in Somali regional state which is located in Jigjiga city.

### Study period

Study was carried out in April, 2019.

### Study design

Community based cross sectional study design was used.

### Population

#### Source population

Source of population was all adult people living in Jigjiga town.

### Study population

Study population was all adult people living in selected kebeles in Jigjiga town.

### Study unit ( subject)

All selected individuals living in selected kebeles in Jigjiga town .

### Inclusion and exclusion criteria

#### Inclusion criteria

All adult population aged between 18-65 years old (both male and female) who are willing to participate this study was included in the study.

#### Exclusion criteria

A study participant who has serious illness during the data collection period and unable to answer the questionnaire was excluded from the study. Those people who were not mentally fit or had chronic diseases during the data collection time were excluded from this study.

### Sample size determination.

#### Sample Size for First Objective.

The sample size of the first objective was determined using a single population proportion formula, by taking the comprehensive knowledge of the study participants towards voluntary blood donation of 43.5% from study conducted in harar town <sup>38</sup>. Using 95 % CI and 5 % margin of error, the sample size was found to be 416 (figure 2) after considering 10% non-response rate

$$n = \frac{(z\alpha/2)^2 p \times (1-p)}{d^2}$$

Where,

n= minimum sample size required for the study.

Z= standard normal distribution (Z=1.96) with confidence interval of 95% and  $\alpha=0.05$

P= 0.435

d= Absolute precision or tolerable margin of error (d) =5%=0.05

$$n = \frac{(z\alpha/2)^2 p \times (1-p)}{d^2} = \frac{1.96^2 \times 0.435(1-0.435)}{(5\%)^2} = 378$$

The overall sample size was 378 + 38 (10% non-response rate) = 416

**Sample Size for Second Objective.**

Sample size was calculated for factors associated with KAP of adult population towards blood donation, (table2) by

considering various factors that were significantly associated with outcome variables with the following assumptions, two-sided confidence level of 95% and power of 80%. Using Epi Info 7 Stat Calc software for double population proportions formula, 10% for non response. (Table 1)

**Table1: Displayed sample size determination for studying the Knowledge, Attitude, Practice and associated factors of Adult Population towards Blood Donation in Jiggiga Town, Somali region Ethiopia, 2019.**

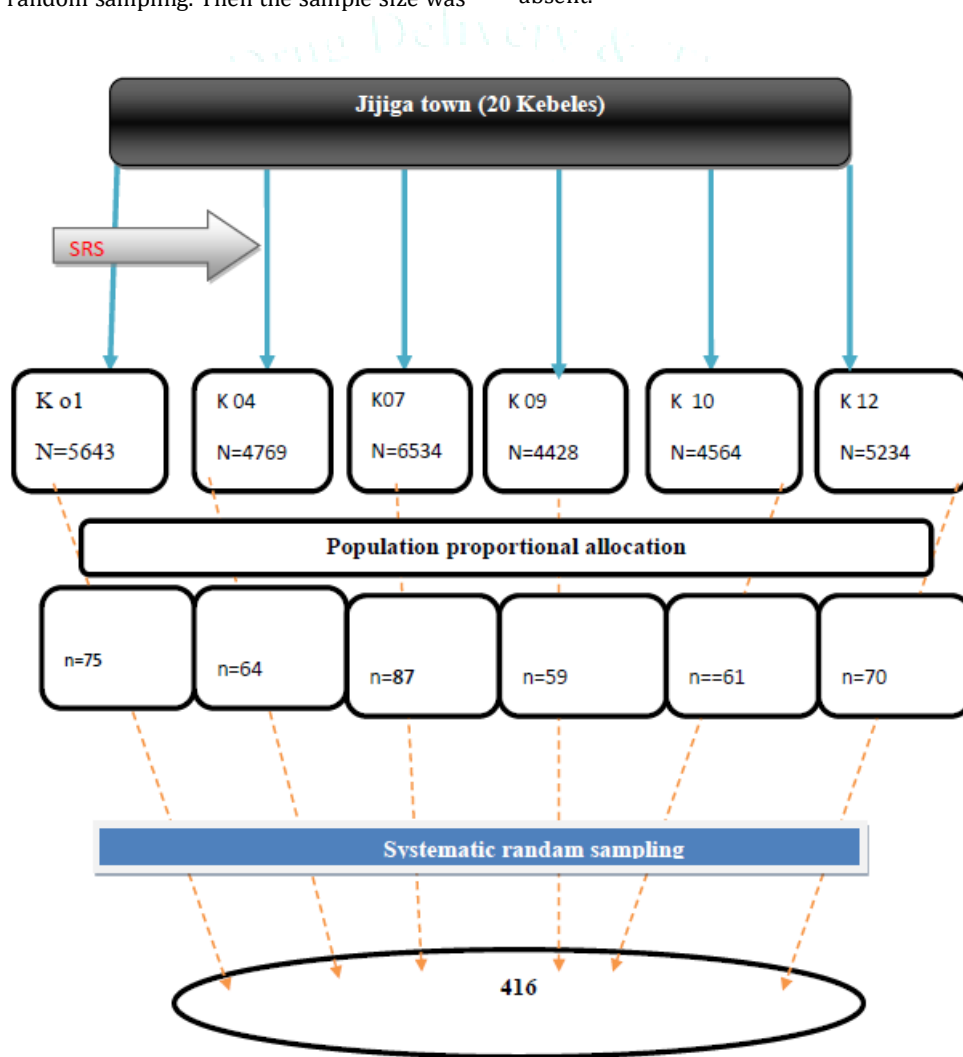
SNO	Variable	exposed	Unexposed	AOR	Sample size (+10% non-response rate)
1	Gender (Male)	25.8%	42.1%	1.68	317
2	Knowledge	39.2%	60.8%	1.40	202
3	Educational status (higher education)	66.7%	33.3%	2.88	88

Finally, the required sample size for this particular study will be decided by taking the maximum sample size from first objective which is 416.

**Sampling technique**

Out of twenty kebeles of Jiggiga town, six kebele was selected by using simple random sampling. Then the sample size was

allocated proportionally to the households of the kebeles. After that systematic random sampling technique was used to select households. Finally, lottery method was employed to select one study participant from selected households with more than one eligible individuals (aged 18–65 years old). The selected individual was checked for two times if absent.



**Figure 2: Schematic diagram of sampling procedure of jiggiga town.**

### Data collection instruments

Data was collected by using interview questionnaire which was prepared in English and was translated to Somali language. The questionnaire includes socio-demographic factors, knowledge, attitude and practice. Six BSc Nursing were recruited for data collection. Data collectors were trained for one-day by principal investigator.

### Study variables

#### Dependent variables

Knowledge ,attitude ,practice of blood donation

#### independent variable

Sociodemographic factors

Age

Sex

Ethnicity

marital status

Religion

Marital status

Educational status

Monthly income

Occupational status

#### Data quality control

For assuring the quality of the data, structured and pre-tested questionnaire was used. Pretest of the questionnaire was employed prior to actual data collection period among 5% of the study sample on one Kebele not included in this study by simple random sampling. During the pre-test, the questionnaire was assessed for its clarity, reliability, sensitivity of the subject matter and for cultural acceptability in the area, findings and experiences from the pre-test was utilized to modify the tools. The final version of the questionnaire which was prepared in English was translated into the local languages of the respondents (Somali and amharic languages) and again translated back to English. The data collectors and supervisors were given one-day intensive training by principal investigator (PI) on the instruments, method of data collection, how to store and keep the collected data. During the data collection process, supervision was conducted strictly and frequently. After the collection of data, completeness of the required type of data was checked for accuracy and consistency before the entry of data to the EPI-DATA and SPSS as well as during entry time and using simple frequency. Skip patterns command was used as one way of quality assurance during data entry.

### Data processing and analysis

After the collection of data, the researcher checked the completeness of questionnaires and incomplete questionnaires were excluded; responses were coded, cleaned and entered into EPI DATA version 3.1.0 and it was exported and analysed using the Statistical Package for Social Sciences (SPSS) version 22. Then descriptive statistics was generated first and results was shown in tables, percentages, charts, mean and standard deviation and then by using inferential statistics, bivariate logistic regression analysis were performed. A variable with p values below 0.05 in the bivariate analysis was considered as candidate variable for multivariate logistic regression. P-values lower than 0.05, 95% confidence interval and adjusted odds ratio were used to determine level of significance of association in multivariate logistic regression model and hosmer and lame show goodness of fit was checked.

### Ethical consideration

The research topic was approved by school of graduate studies ethical committee of JU and the research proposal was submitted to JU then the ethical clearance was obtained from school of graduate studies. Permission to conduct the study was also obtained from Jijiga City administration. Verbal informed consent was given and then Data collection was conducted after explaining the aim of the study, confidentiality and its possible benefits to the participant. Measures were taken to ensure the respect, dignity and freedom of each individual participating in the study. Health education and awareness creation on importance of blood donation was given.

## RESULT

### Socio-Demographic Characteristics of Respondents

From a total of 407 participants, 208 (51%) were females and 199 (48.9%) were males. Majority of the participants ((n=231(56.8%)) were in the age range of 18-30 years. The mean age of study participants was 28.34±8.704 SD years. Majority of the study participants were married 253(62.2%), single 147(36.1) respectively. Regarding to ethnicity, majority of the participants were Somali 393(96.6%). About 123(30.2%) respondents were illiterate, while 48(11.8%), 99(24.3%) and 137(33.7%) of the study participants had attained primary, secondary and higher education, respectively. Most of the study participant were Islam religion followers 403(99.0%) and rest of the respondents followed by Orthodox 2 (0.5%), Others 2 (0.5%). According to occupational status of the study participants were house wife 155(38.1%) **(Table 2).**



**Table 2: Description of socio demographic characteristics of adult population living in Jigjiga town (n=407), Ethiopia, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Age	18-30yrs	231	56.8
		31-45yrs	126	31
		>45yrs	50	12.3
2	Gender	Male	199	48.9
		Female	208	51
3	Marital status	Married	253	62.2
		Single	147	36.1
		Divorced	5	1.2
		Widowed	2	0.05
4	Ethnicity	Somali	393	96.6
		Oromo	3	0.7
		Amhara	4	1
		Others	7	1.7
5	Educational status	illiterate	123	30.2
		Primary	48	11.8
		Secondary	99	24.3
		Diploma and higher education	137	33.7
6	Religion	Muslim	403	99
		Orthodox	2	0.5
		Others		0.5
7	Occupational status	House wife	155	38.1
		Government employee	71	17.4
		Student	89	21.9
		Daily worker	83	20.4
8	Monthly income	1000-2500	104	25.6
		2600-4400	121	29.7
		>4500	182	44.7

### Knowledge of the study participants

A total of 153(37.6%) respondents knew their own blood groups. Majority of the study participants 285(70%) knew that blood donor did not get an infection during blood donation process. Most of the respondents had adequate knowledge towards screening of donated blood such as HIV/AIDS and malaria before the blood transfusion 405(99.5%). Most of the respondents are aware of the risk of transmission of HIV/AIDS 301(74%), HBV 90(22.1%), HCV 3(0.9%), Syphilis 5(1.5%), and Malaria 8(2.3%) respectively. The respondents stated that the donation

frequency annually was three times 117(28.8%), four times 101 (24.9%), two times 88(21.8%) and the remaining 74(18%) had no knowledge of this. Regarding to time interval between each donation of the study participants was every one month 18(4.4%), three months 182(44.7%), four months 145(35.6%) six months 54(13.3%), and the remaining 8(20%) had no knowledge of this. On knowledge of volume of blood collected in each process 214(52.6%) stated above 350 mls, 111(27.3%) less than 350 millilitres, 80 (19.7%), while 2(0.5%) express no knowledge of it (Table 3).

**Table3: Knowledge towards blood donation among adult population living in Jijiga town, Ethiopia, 2019**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Knowledge of blood group	Yes	153	37.6
		No	259	64.1
2	Can a person be infected during blood donation	Yes	122	30
		No	285	70
3	Is donated blood screened by HIV/AIDS and malaria	Yes	405	99.5
		No	2	0.5
4	Which disease can transmit for blood donation	HIV/AIDS	301	74
		HBV	90	22.1
		HCV	3	0.9
		Syphilis	5	1.5
		Malaria	8	2.3
5	How often can individual donate in a year	Ones	28	6.9
		Two times	88	21.6
		Three times	117	28.8
		Four times	101	24.9
		Don,t know	74	19
6	Time between each donation	One month	18	4.4
		Three months	182	44.7
		Four months	145	35.6
		Six months	54	13.3
		Don,t know	8	2
7	who should not donating blood	Age < 18 years	109	26.8
		Age >65	72	17.7
		People who have blood born disease	192	47
		Anemic peeson	25	6.1
		Heart disease peron	9	2.2
8	Volume of blood donation	>350ml	214	52.6
		<350ml	111	27.3
		350ml	80	19.7
		Don,t know	2	0.5
9	Time of blood donation process	20-30 min	119	29.2
		20 min	133	32.6
		Don,t know	155	38.1
10	Suatble age of blood donation	18-30	191	47
		31-44	145	35.6
		>45	71	17.5

### Attitude of the study participants

A total of 403 (99%) respondents said blood donation is good and Voluntary donation was accepted as the best source of donor by 384(93.3%), friendly donors by 18(4.4%), remunerated (paid) by 4(1.0%), and the remaining had no knowledge of it. A total of 393 (96.6%) said something happen to a donor/ participants, 189(78.1%),14(3.4%) stated that blood donor, become

temporary weak and fall sick, might contract infection respectively. From the total respondents 397(97.5%) said that the patient relatives should be asked to donate blood. Majority of the study participants 400(98.3%) stated that as they encourage their families and relatives to donate and 5(1.2%) reported pregnancy mother can donate the blood (**Table4**) shows the detail attitude level of the respondents regarding to blood donation.

**Table 4:- Attitude towards blood donation among adult population living in Jigjiga town, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	What do you think about blood donation	Good	403	99
		Bad	1	0.2
		No idea	3	0.7
2	What do you think is the best source of blood donation	Voluntary donor	384	93.3
		Friendly donor	18	4.4
		Rremunerated donor	4	1.0
		don't know	1	0.2
3	Can something harmful happen to a blood donor during or after blood donation	Yes	133	32.7
		No	261	64.1
		I don't know	13	3.2
4	Blood donation makes you weak and sick	Yes	318	78.1
		No	89	21.9
5	What can happen blood donor during and after blood donation	Contact infection	14	3.4
		Temporery weakness	393	96.6
6	Blood donation can lead to anemia	Yes	89	21.8
		No	318	78.1
7	Should patient relative be ask to donate blood	Yes	397	97.5
		No	9	2.2
8	Do you encourage blood donation to your relative	Yes	400	98.3
		No	7	1.5
		Yes	5	1.2
9	Can a pregnancy women donate blood	No	402	98.8

### Practice of the study participants

A total of 77 study participants (18.9%) have donated with 34 (44.2%) one times, 27 (35.1%) two times and 9(11.7%), 7(9.1%) more than three times respectively. Most 47(61.1%) donated on friendly basis,25 (32.5%) for a voluntary, 5(6.6%) to know their screening status respectively.330

respondents (81.1%) had never donated blood in their life time. Reason for non donation included 189(46.4%) not request to donate, unfit to donate 116 (28.5%)fear of needle 90(22.1%) ,need to donate for relatives or friends in the future, 10(2.5%) and fear of knowing in my status, 2(0.5%) fear of knowing my screen status **Table 5**.



**Table 5: Practice towards blood donation among adult population living in Jigjiga town, Ethiopia, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Have you ever donated blood in your life time	Yes	77	18.9
		No	330	81.1
2	How many times you donated blood in your life time	One time	34	44.2
		Two times	27	35.1
		Three times	7	9.1
		More than three times	9	9.1
3	If an opportunity gives you would like to donate blood	Yes	367	90.2
		No	40	9.8
4	Would you like to be regular blood donor in the future	Yes	375	92.1
		No	32	7.9
5	Would you like to advice family and friend for blood donation	Yes	393	96.6
		No	14	3.4
6	Why did you donate	Friendly	47	61.0
		Voluntry	25	32.5
		To know my status	5	6.6
7	If no what is the reason for not donating the blood	Unfit to donate	116	28.5
		Need to donate	10	2.5
		friend in the future	90	22.1
		Fear of needle	189	46.4
		Not requested		
		Fear of knowing mystatus	2	0.5

**Table 6: Knowledge towards blood donation among adult population living in Jigjiga town, Ethiopia, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Knowledge towards blood donation	Good knowledge	249	61.2
		Poor knowledge	158	38.8

**Prevalence of knowledge towards blood donation**

The overall prevalence of the knowledge towards blood donation among adult population living in jigjiga town in this study was 61.2% (CI : ( 56.3 - 65.8). (Table 6)

**Assessment of Knowledge towards a blood donation**

Knowledge about blood donation was assessed using 8 general questions which are deemed to be known by general

population like can a person be infected during blood donation, is donated blood screened by HIV/AIDS and malaria before blood transfusion. Each response was scored as "1" for correct response and "0" for incorrect response. Knowledge scores for individuals were calculated and summed up to give the total knowledge score. Participants who correctly responded to more than 50% of knowledge assessing questions were considered as having

adequate knowledge about blood donation, whereas those who scored <50% were considered as having inadequate

knowledge about blood donation (Table 7)

**Table 7: Knowledge assessment score towards blood donation among adult population living in Jigjiga town, Ethiopia, 2019.**

S.N	Knowledge assessment items	Response	
		Correctly responded (%)	Incorrectly responded (%)
1	Can person be infected during blood donation	285(70)	122(30)
2	How often can individual donate in a year	250 (61.4)	157(38.6)
3	What is the time between each donation	182 (44.7)	225 (55.3)
4	Is donated blood screened by HIV/AIDS and malaria	405 (99.5)	2 (0.5)
5	Volume of each donation	214 (52.6)	193 (47.4)
6	Duration of donation process	287 (70.5)	120 (29.5)
7	Minimum weight for blood donation	400 (98.3)	7 (1.7)
8	How many lifes can each unit of blood can be saved	385 (94.6)	22 (5.4)

#### Prevalence of attitude towards blood donation

The overall prevalence of the attitude towards blood donation among adult population in this study was 318 (78.1%) (CI: (75.4 – 83.5))(Table 8).

**Table 8: Attitude towards blood donation among adult population living in Jigjiga town, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Knowledge towards blood donation	Good attitude	318	78.1
		Poor attitude	89	21.9

#### Assessment of attitude towards blood donation.

Similarly, 5 attitude related questions were asked, and the responses of each question were scored as "1" for correct response and "0" for incorrect response (Table 9). Attitude scores for individuals were calculated and summed up to

give the total attitude score. Participants who correctly responded to more than 50% of attitude assessing questions were considered as having good attitude towards blood donation, whereas those who scored less than 50% were considered as having poor attitude towards blood donation.

**Table 9: Attitude towards blood donation among adult population living in Jigjiga town, 2019.**

S.N	Attitude assessment items.	Response	
		Correctly responded %	Incorrectly responded%
1	What do you think about blood donation	403 (99)	4 (0.98)
2	What do you think is the best source of blood donation	384 (94.3)	23 (5.7)
3	Can some thing harmful happen to a blood donor during and after blood donation	261 (64.1)	146 (35.9)
4	Blood donation leads to anemia	318 (78.1)	89 (21.9)
5	Can blood donation makes you week and sick	89 (21.9)	318 (78.1)

**Prevalence of practice towards blood donation.**

Only 77 (18.9%) of study participants donated blood in their life, while majority 330 (81.1%) of the respondents have not donated in their life(CI: (15.2 – 22.9).

**Assessment of practice towards blood donation.**

The practice was assessed by asking about history of previous donation and the frequency of donation (Table 10). The practice was scored from largest (the number of times a donor donated previously) to smallest 0 (never donated before).

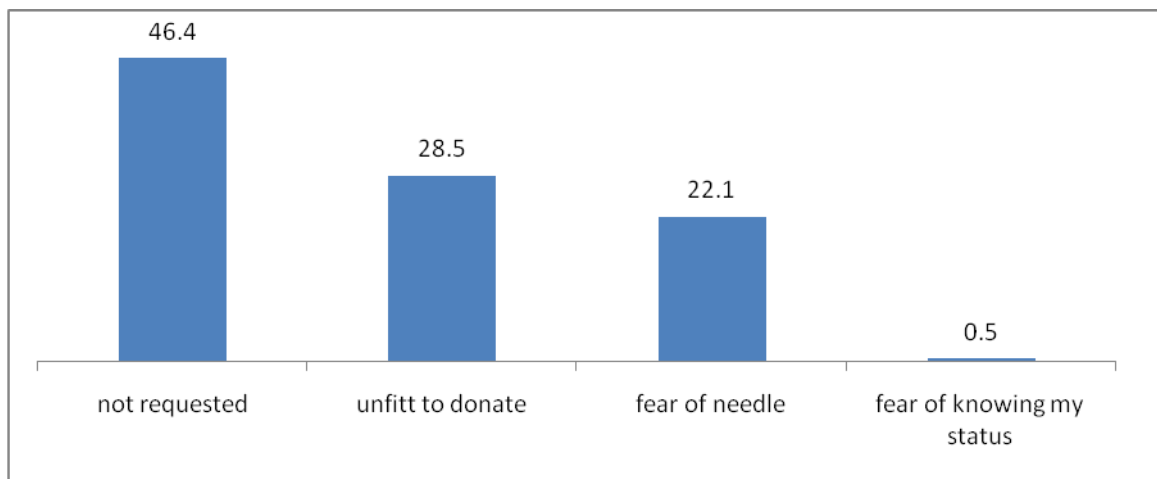
**Table 10: Practice towards blood donation among adult population living in Jigjiga town, 2019.**

S.N	Variable	Category	Frequency (n=407)	Percentage (%)
1	Blood donation practice	Practice	77	18.9
		Not practice	330	81.1

**Reasons for not donating**

The main reasons given by the respondents for not donating blood was found to be not requested 189 (46.4%) about

blood donation and their feeling that they are medically unfit 116(28.5%)(Figure 3)



**Figure 3: Reasons for not donating blood**

**Factors Associated with Knowledge of blood donation**

**Bivariate analysis**

Bivariate analysis was conducted for socio demographic variables and knowledge towards blood donation. Bivariate analysis shows, occupation, age, educational status, and

gender were significantly associated with adequate knowledge towards blood donation. Those variables which were with p -values less than 0.05 at Bi-variate logistic regression were included in multiple logistic regressions (Table 11).

**Table 11: Bivariate analysis of socio-demographic characteristics and an overall knowledge about blood donation among adult population living in jigjiga town, Ethiopia, 2019(407).**

Variable	Category	Knowledge status		COR(95% CI)	P-value
		good (%)	poor(%)		
Age	18-30	133(57.6)	98(42.4)	0.429(0.213, 0.863)	0.059
	31-45	75(59.5)	51(40.5)	0.464(0.222, 0.973)*	0.042
	>45	38(76)	12(24)	1.00	
Sex	Male	133(66.8)	66(33.2)	1.694(1.133, 2.532)*	0.010
	Female	113(54.3)	95(45.7)	1.00	
Ethnicity	Somali	236(60.1)	157(39.9)	1.00	
	Oromo	2(66.7)	1(33.3)	1.331(0.120, 14.798)	0.816
	Amhara	3(75)	1(25)	1.996(0.206, 19.359)	0.551
	others	5(71.4)	2(28.6)	1.663(0.319, 8.679)	0.546
Educational level	illiterate	65(52.8)	58(47.2)	1.00	
	primary	23(47.9)	25(52.1)	0.821(0.421, 1.601)	0.563
	Secondary	59(59.6)	40(40.4)	1.316(0.771, 2.248)	0.314
	College and higher	99(72.3)	38(27.7)	2.325(1.389, 3891)*	0.001
Occupational status	Housewife	76(49)	79(51)	1.00	
	Government employee	54(76.1)	17(23.9)	3.302(1.759, 6.197)*	0.000
	student	53(59.6)	36(40.4)	1.530(0.903, 2.594)	0.114
	Daily worker	57(68.7)	26(31.3)	2.279(1.301, 3.992)*	0.004
	NGO	6(66.7)	3(33.3)	2.079(0.502)	8.611
Religion	Muslim	244(60.5)	159(39.5)	1.00	
	Orthodox	1(50)	1(50)	0.652(0.040, 10.493)	0.763
	Others	1(50)	1(50)	0.652(0.040, 10.493)	0.763
Monthly income	1000-2500	61(58.7)	43(41.4)	1.00	
	2600-4400	73(60.3)	48(39.7)	1.072(0.629, 1.828)	0.891
	>4500	112(61.5)	70(38.5)	1.128(0.690, 1.844)	0.631
Marital status	Married	146(57.7)	107(42.3)	1.00	
	Single	95(64.6)	52(35.4)	1.339(0.880, 2.038)	0.173
	Divorced	4(80)	1(20)	2.932(0.323, 26.602)	0.339
	Widowed	1(50)	1(50)	0.733(0.45, 11.849)	11.849

CI= Confidence Interval, COR= Crude Odd Ratio; \*= p-value < 0.05, 1= reference

### Factors Associated with Knowledge of blood donation

#### Multivariate analysis

To minimize the risk of confounder for dependent variables multiple logistic regressions were used. The result of multiple logistic regression model showed that age, education, and occupational status of the respondent were associated significantly with knowledge of blood donation. Those who were in college and higher education were two times knowledgeable than (AOR=2.034, 95%CI: ((1.128-3.669)) those in secondary and primary education respondents

(AOR=1.240, 95%CI:(0.673, 2.284) ,(AOR=0.778, 95%CI:(0.391, 1.546) respectively.

A study participants who were government employees and daily workers were two times (AOR=2.259, 95% CI:(1.103, 4.629), (AOR=2.029, 95% CI:( 1.084, 3.798) more knowledgeable than students(AOR=2.259, 95% CI: ((1.103, 4.629))). A study participants age range between 18-30 were less likely to have knowledge towards blood donation 59.2% times (AOR=0.408, 95% CI: ((0.194, 0.858)) (Table 12).

**Table12: Multivariate analysis of socio-demographic characteristics and an overall knowledge about blood donation among adult population living in jigjiga town, Ethiopia, 2019(407).**

Variable	Category	Knowledge category		AOR(95% CI)	P-value
		good (%)	poor(%)		
1 Age	18-30	133(57.6)	98(42.4)	0.429 (0.213, 0.863)	0.018*
	31-45	75(59.5)	51(40.5)	0.464 (0.222, 0.973)	0.055
	>45	38(76)	12(24)	1.00	
2 Sex	Male	133(66.8)	66(33.2)	1.064 (0.660 -1.713)	0.800
	Female	113(54.3)	95(45.7)	1.00	
3 Educational level	illiterate	65(52.8)	58(47.2)	1.00	
	primary	23(47.9)	25(52.1)	0.778(0.391, 1.546)	0.475
	Secondary	59(59.6)	40(40.4)	1.240 (0.673- 2.284)	0.490
	College and higher	99(72.3)	38(27.7)	2.034(1.128- 3.669)*	0.018
4 Occupational status	Housewife	76(49)	79(51)	1.00	
	Governmentemployee	54(76.1)	17(23.9)	2.259 (1.103- 4.629)*	0.026
	student	53(59.6)	36(40.4)	1.291 (0.690- 2.414)	0.424
	Daily worker	57(68.7)	26(31.3)	2.029 (1.084 -3.798)*	0.027
	NGO	6(66.7)	3(33.3)	1.732 (0.387- 7.743)	0.472

AOR= Adjusted Odd Ratio; CI= Confidence Interval, \*= p-value < 0.05, 1= reference

#### Factors Associated with attitude of blood donation

analysis shows, age, educational, occupational status were significantly associated with good attitude towards blood donation.(Table 13).

#### Bivariate analysis

Bivariate analysis was conducted for socio demographic variables and attitude towards blood donation. Bivariate

**Table13: Bivariate analysis of socio demographic characteristics and an overall attitude about blood donation among adult population in jigjiga town, Ethiopia, 2019(407).**

S/n	Variable	Category	Attitude status		COR(95% CI)	P-value
			Good(%)	Poor(%)		
1 Age		18-30	180 (77.9)	51 (22.1)	1.00	
		31-45	91 (72.2)	35 (27.8)	0.737(0.447, 1.213)	0.230
		>45	47 (94)	3 (6)	4.439(1.327,14.854)*	0.016
2 Sex		Male	161 (80.9)	38 (19.1)	1.376(0.857, 2.211)	0.187
		Female	157 (75.5)	51 (24.5)	1.00	
3 Ethnicity		Somali	309 (78.8)	84 (21.4)	1.00	
		Oromo	2 (66.7)	1 (33.3)	0.544(0.049, 6.069)	0.621
		Amhara	4(100)	0(0.0)		
4 Educational level		Others	3(42.9)	4(57.1)		
		Illeterate	80(65)	43(35)	1.00	
		Primary	40(83.3)	8(16.7)	2.687(1.155, 6.255)*	0.022
		Secondary	84(84.8)	15(15.2)	3.010(1.552, 5.840)*	0.001
5 Occupational status		College and higher	114(83.2)	23(16.8)	2.664(1.489, 4.765)*	0.001
		House wife	112(72.3)	43(27.7)	1.00	
		Government employee	56(78.9)	15(21.1)	2.645(1.209, 5.785)*	0.015
		Student	79(88.8)	10(11.2)	3.033(1.439, 6.395)*	0.004
		Daily worke	64(77.1)	19(22.9)	1.293(0.695, 2.407)*	0.417
6 Religion		NGO	7(77.8)	2(22.2)	1.344(0.269, 6.725)	0.719
		Muslim	316(78.4)	87(21.6)	1.00	
		Orthodox	1(50)	1(50)	0.252( 0.016, 4.065)	0.331
		Others	1(50)	1(50)	0.252( 0.016, 4.065)	0.331
7 Monthly income		1000-2500	83(79.8)	21(20.2)	1.00	
		2600-4400	93(76.9)	28 (23.1)	0.870 (0.453, 1.671)	0.676
		>4500	142(78)	40 (22)	0.933 (0.509, 1.712)	0.823
8 Marital status		Married	189(74.7)	64(25.3)		
		Single	122(83)	25(17)		
		Divorce	5(100)	0(0.0)		
		Widowed	2(100)	0(0.0)	1.00	

CI= Confidence Interval, COR= Crude Odd Ratio; \*= p-value < 0.05, 1= reference

**Factors Associated with attitude of blood donation****Multivariate analysis**

In bivariate logistic regression age, education, and occupational status were significantly associated with attitude of the participants, while in multivariate logistic regression education level was significantly associated with

attitude towards blood donation. Those respondents who are college and higher education and secondary were 2.450 times more likely (AOR=2.450, 95% CI: (1.038 - 5.782)), 2.359 (AOR=2.359, 95% CI: (1.180 - 4.717)) to have good attitude towards blood donation compared to primary school 2.161 (AOR=2.161, 95% CI: (1.039-4.495)) respectively (Table 14).

**Table 14: Multivariate analysis of socio-demographic characteristics and an overall attitude about blood donation among adult population living in Jijiga town, Ethiopia, 2019.**

S.N.	Variable	Category	Attitude status		AOR(95% CI)	P-value
			good (%)	poor (%)		
1	Age	18-30	180 (77.9)	51 (22.1)	1.00	
		31-45	91 (72.2)	35 (27.8)	0.226(0.066 - 0.774)	0.018\$
		>45	47 (94)	3 (6)	0.209(0.059 - 0.737)	0.018\$
2	Educational level	illiterate	80(65)	43(35)	1.00	
		primary	40(83.3)	8(16.7)	2.450(1.038 - 5.782)*	0.041
		Secondary	84(84.8)	15(15.2)	2.161(1.039 - 4.495)*	0.039
		College and higher	114(83.2)	23(16.8)	2.359(1.180 - 4.717)*	0.015
3	Occupational status	House wife	112(72.3)	43(27.7)	1.00	
		Government employee	56(78.9)	15(21.1)	2.022(0.828 - 4.940)	0.122
		Student	79(88.8)	10(11.2)	2.086 (0.889 - 4.940)	0.091
		Daily worke	64(77.1)	19(22.9)	1.181(0.215 - 6.476)	0.699
		NGO	7(77.8)	2(22.2)	0.978(0.543 - 1.761)	0.942

AOR= Adjusted Odd Ratio; CI= Confidence Interval, \*= p-value < 0.05, 1= reference

**Factors Associated with practice of blood donation****Bivariate analysis**

Variables that are significantly associated in bivariable logistic regression analysis only with practice of blood

donation were, gender (male), higher education, occupational status (government employee, students, daily workers, NGO workers) respectively (Table 15).

**Table 15: Bivariate analysis of socio-demographic characteristics and practice of adult population towards blood donation living Jijiga town, Ethiopia 2019 (n= 407).**

S/N	Variable	Category	Practice category		COR(95% CI)	P-value
			Practice (%)	Not practice (%)		
1	Age	18-30	44(19.0)	187(81.0)	1.00	
		31-45	22(17.5)	104(82.5)	0.834(0.396, 1.758)	0.634
		>45	11(22)	39(78)	0.750(0.333, 1.689)	0.487
2	Sex	Male	65(32.7)	134(67.3)	7.923(4.120, 15.235)*	0.000
		Female	12(5.8)	196(94.2)	1.00	
3	Ethnicity	Somali	74(18.8)	319(81.2)	0.580(0.110, 3.048)	0.520
		Oromo	0(0.0)	3(100)	0.000	
		Amhara	1(25)	3(75)	0.833(0.051, 13, 633)	0.898
		others	2(28.6)	5(71.4)	1.00	
4	Educational level	illiterate	10(8.1)	113(91.9)	1.00	
		primary	3(6.3)	45(93.7)	0.753(0.198, 2.865)	0.678
		Secondary	16(16.2)	83(83.7)	2.178(0.941, 5.043)	0.069
6	Occupational status	College and higher	48(35)	89(65)	6.094(2.920, 12.719)*	0.000
		Housewife	7(4.5)	148(95.5)	1.00	
		Government employee	28(39.4)	43(60.6)	13.767(5.625, 33.698)*	0.000
		Student	20(22.5)	69(77.5)	6.128(2.474, 15.178)*	0.000
		Daily worker	17(20.5)	66(79.5)	5.446(2.156, 13.758)*	0.000
7	Religion	NGO	5(55.6)	4(44.4)	26.429(5.794, 120.559)*	0.000
		Muslim	74(18.4)	329(81.6)	1.00	
		Orthodox	2(50)	0(0.0)		
8	Monthly income	Others	1(50)	1(50)		
		1000-2500	22(21.2)	82(78.8)	1.00	
		2600-4400	19(15.7)	102(84.3)	0.694(0.352, 1.369)	0.292
		>4500	36(19.8)	146(80.2)	0.919(0.507, 1.667)	0.781

CI= Confidence Interval, COR= Crude Odd Ratio; \*= p-value < 0.05, 1= reference



## Factors Associated with practice of blood donation

### Multivariate analysis.

In bivariate logistic regression analysis, age, sex, education, occupational status were statistically associated with blood donation practice of the respondents, while in multivariate logistic regression analysis, participant' sex, education, and occupational status were found to be significantly associated with practice of blood donation. Those participants, NGO workers were more likely to donate blood eight times higher

than (AOR=8.167, 95% CI: (1.530, 43.592)) as compared to government employees (AOR= 4.812, 95% CI: (1.795-12.901)) and students (AOR=3.336, 95% CI:(1.198- 9.289)) respectively. Male participants were more likely to donate blood five times (AOR=5.245, 95% CI:(2.556 -10.763)) higher than female for blood donation. In addition to this, those respondents who were graduated from college and higher education were more likely to donate blood than others 3.247 (AOR=3.247, 95% CI: ((1.408 -7.489))) Table 16.

**Table16: Multi-variate analysis of socio-demographic characteristics and practice of adult population towards blood donation living in Jigjiga town, Ethiopia 2019 (n= 407).**

S No	Variable	Category	Practice category		AOR(95% CI)	P-value
			Practice (%)	Not practice (%)		
1	Sex	Male	65(32.7)	134(67.3)	5.245(2.556 -10.763)*	0.0001
		Female	12(5.8)	196(94.2)	1.00	
2	Educational level	illiterate	10(8.1)	113(91.9)	1.00	0.535
		primary	3(6.3)	45(93.7)	0.643 (0.159 -2.597)	
		Secondary	16(16.2)	83(83.7)	1.108(0.425 -2.887)	
		College and higher	48(35)	89(65)	3.293(1.421 -7.631)*	
3	Occupational status	Housewife	7(4.5)	148(95.5)	1.00	0.002
		Government employee	28 (39.4)	43 (60.6)	4.812 (1.795- 12.901)*	
		Student	20 (22.5)	69 (77.5)	3.336 (1.198- 9.289)*	
		Daily work	17 (20.5)	66 (79.5)	2.517 (0.917- 6.907)	
		NGO	5 (55.6)	4 (44.4)	8.932 (1.631- 48.923)*	

AOR=adjusted odds ratio, CI= Confidence Interval, \*= p-value < 0.05, 1= reference

## DISCUSSION

In this study the researchers tried to investigate the level and factors associated with knowledge, attitude, and practice of adults' population towards blood donation in Jigjiga town. A total of study participants, 249(61.2%)(CI: (56.3 - 65.8)) had adequate knowledge regarding blood donation. This study is higher than a community based Cross-sectional study conducted in Harar town which was aimed to assess the level of knowledge, attitude and practice of voluntary blood donation among total of 845 participants which reported that 43.5% of them had adequate knowledge towards blood donation<sup>39</sup>. The possible reason for this discrepancy might be due to the difference in the sample size. On the other hand this result is contemporary to study conducted in Debremarkos town which was aimed to assess level of Knowledge, attitude and practice towards blood donation and associated factors which shows overall level of knowledge towards blood donation was found to be 56.5%<sup>40</sup>.

In the current study, multivariate logistic regression showed that education, occupational status was the variables that significantly associated with the knowledge of participants. Participants who attended college and higher education (AOR = 2.034; 95% CI: 1.128; 3.669) were more likely to have adequate knowledge towards blood donation. So, as the level of education increases, participants' knowledge

towards blood donation also increases. On the other hand government employees participants and daily workers (AOR=2.259; 95% CI: 1.103, 4.629), (AOR=2.029, 95% CI: 1.084- 3.798), were more likely to have adequate knowledge towards blood donation than students (AOR=1.291, 95% CI: 0.690- 2.414) respectively. Majority 318 (78.1%)(CI: (75.4 - 83.5)) of the study participants have good attitude towards blood donation. This study is comparable to other study conducted in Gondar town in which majority 630 (82%) of the study participants have good attitude towards blood donation<sup>10</sup>. However, it is higher than study done in Harar town which shows among the 845 study respondents, only 278 (32.9%) had positive attitude toward voluntary blood donation.

But this study is lower than studies done among University Students in Kilimanjaro, Tanzania which revealed majority of the participants (93%) had positive attitudes towards blood donation<sup>41</sup> total of 403 (99%) respondents report blood donation is good and Voluntary blood donation was the most important source of donor by 384(93.3%), friendly donors by 18(4.4%), remunerated (paid) by 4(1.0%), and the remaining had poor attitude of it. Majority 318 (78.1%) of them reported blood donation cannot lead to anemia. This result is opposite with a study conducted in Gonder City in which 282 (36.7%) of them had a perception that blood donation causes anemia<sup>10</sup>. The possible reason for this

discrepancy might be due to the difference in the socio-cultural factors. In this study, education was the only variable which significantly associated with the attitude of the participants using multivariate logistic regression. Those participants who were college and higher education (AOR = 2.450; 95% CI: 1.038, 5.782) were more likely to have good attitude towards blood donation. In the current study only 18.9% (CI: (15.2 – 22.9)) of them have donated blood in the past, out of which 47 (61%) donated to friends or relatives, 25 (32.5%) voluntarily, 5 (6.6%) to know their screening status respectively. Majority of the study participants donated 34 (44%) one time, 27 (35.1%) two times and 9 (11.7%), 7 (9.1) more than three times respectively. In this study, multivariate logistic regression showed gender, education and occupational status was the variables that significantly associated with the practice of blood donation. In this study, more than half, 65 (32.7%), of donors were male.

The result is in line with a study conducted in Gondar town which showed that majority 94 (66.6%), of blood donors were male<sup>10</sup>. Males were five times more likely to donate blood compared to females (AOR=5.245, 95% CI:(2.556 - 10.763)). This finding is also inline with a study conducted among Healthcare Workers at the University of Benin Teaching Hospital, Benin City, Nigeria which reported, only 22.1% of them have donated blood in the past, out of which 52.8% were as family replacement and 41.7% voluntary<sup>42</sup>. This finding was supported by a study conducted in Harar, Debremarkos and among university students in Saudi Arabia which revealed only 191 (22.6%) 124 (16.1 %) and 62 (19.02%) were donors, respondents had donated blood before the study period respectively<sup>10,43</sup>. This finding is lower than a study conducted in Arsi university and Adama science and technology university which revealed 27.2% Health Science students have donated blood in their life time. The possible reason for this difference may be due to level of education and matter of health experience towards blood donation.

The major reason given by those who had never donated was that no one requested 189 (46.4%) about blood donation and their feeling that they are medically unfit 116 (28.5%) respectively. Those respondents who are graduated college and higher education were more likely to donate blood than others 3.247 (AOR=3.247 , 95% CI: ((1.408 -7.489))). Being NGO worker were significantly associated to practice of blood donation in this study.

Those participants who are NGO workers were more likely to donate blood eight times higher than (AOR=8.167, 95% CI: (1.530, 43.592)) as compared to government employees (AOR= 4.812, 95% CI: (1.795- 12.901) and students (AOR=3.336, 95% CI: (1.198- 9.289) respectively.

## CONCLUSION

In general, the study showed that the proportion of adults who had adequate level of knowledge about blood donation and good attitude towards blood donation is high. However, the level of blood donation practice was low; and perception like not requested, not being fitted to donate blood, fear of needle during blood donation, were the major reason for not donating blood. College and higher education, occupational status, particularly government workers remained to be significantly associated with knowledge towards blood donation. Regarding factors affecting attitude towards blood donation, education was the only variable which remained to be significantly associated with attitude. Besides sex, education, and occupational status were statistically significant variables that increase blood donation practice.

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