

Knowledge, attitude, and practice regarding voluntary blood donation among adult residents of Harar town, Eastern Ethiopia: a community-based study

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Background: The availability of safe blood and blood products is a critical factor in improving health care. In Ethiopia, lack of voluntary blood donors is a major challenge. This could be due to low community knowledge, unfavorable attitude, and poor donation practice regarding voluntary blood donation. Thus, the aim of this study was to assess community knowledge, attitude, and practice regarding voluntary blood donation among adults in Harar town, Ethiopia.

Materials and methods: A community-based cross-sectional study was conducted from July 1 to July 31, 2015. A total of 845 adults were randomly selected and interviewed using a pretested, structured questionnaire. Six trained data collectors conducted a face-to-face interview. Data were entered into EpiData Version 3 and analyzed using STATA Version 11.

Results: Comprehensive knowledge of the study participants toward voluntary blood donation was 43.5%. Multivariable logistic regression demonstrated that male sex (adjusted odds ratio [AOR] = 1.69, 95% confidence interval [CI]: 1.19–2.39), age (31–45 years; AOR = 0.50, 95% CI: 0.34–0.74) and >45 years (AOR = 0.60, 95% CI: 0.38–0.95), and higher education (AOR = 15.34, 95% CI: 5.01–46.91) were significantly associated with comprehensive knowledge about voluntary blood donation. A total of 278 (32.9%) study participants had positive attitude toward voluntary blood donation. College graduates (AOR = 13.05, 95% CI: 4.12–41.29) were significantly associated with positive attitude toward voluntary blood donation. Only 191 (22.6%) subjects had ever donated blood. However, the proportion of study participants who donated blood voluntarily with good knowledge about voluntary blood donation was significantly lower than the study participants who donated blood voluntarily with low knowledge ($X^2 = 6.1746$, $P = 0.013$).

Conclusion: This study showed an inauspicious attitude toward blood donation and poor blood donation practices. Subjects with good comprehensive knowledge about voluntary blood donation were less likely to donate blood voluntarily compared to those with lower comprehensive knowledge about voluntary blood donation.

Keywords: community, voluntary blood donation, knowledge, attitude, practice

Background

Blood transfusion is the transfer of blood or blood components from the donor into the bloodstream of the recipient. It is a life-saving scheme in both routine and emergency situations to replace blood cells or blood products lost through bleeding.^{1,2}

Although the prevalence of adequate knowledge toward blood donation is estimated to be 60% in developing countries, blood donation rate in low-income countries is far

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less than that in middle- and high-income countries.^{3,4} The prevalence of blood donation was less than satisfactory due to misconceptions, poor knowledge, and unfavorable attitude toward donation.⁵ In addition, sex, age, and educational status were found as predictors of voluntary blood donation.⁵⁻⁸ Members of the Ethiopian Jewish community showed an extremely limited intention to donate blood.⁹

Each year, ~25%–40% of Ethiopian mothers die due to lack of enough blood from donors.¹⁰ Therefore, ensuring the availability of safe blood at all health facilities could reduce maternal deaths, which makes sure that the lives of every mother will not be endangered in case of emergencies for lack of blood.¹¹ 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.¹⁰ Likewise, the Harar blood bank needs 37,000 units of blood per year, yet only 4,000 units per year were collected in 2014 (Harar blood bank, unpublished data, 2014)

In Ethiopia, an integrated strategy for voluntary blood donation and recruiting a sufficient number of safe blood donors are major confronts.¹¹ This could be attributed to low community knowledge, unpromising attitude, and poor blood donation practice regarding voluntary blood donation. Therefore, a better understanding on the level of community knowledge, attitude, and the practice of donors may help to strengthen the blood donation program for areas that have a similar setting with the study area. In this study, we assessed community knowledge, attitude, and practice regarding voluntary blood donation among adults in the eastern part of Ethiopia.

Materials and methods

Study area and period

A community-based cross-sectional study was conducted from July 1 to July 31, 2015, in Harari people's regional state.

Study population and data collection

Harar town has six districts, of which three were randomly selected for this study. One ward from each district was then randomly selected. Systematic random sampling technique was used to include households. From the selected households, 845 adult (aged 18–60 years) study participants were included. When there was more than one eligible household member in the house, only one eligible individual was recruited using simple random sampling technique.

Data were collected using a pretested, structured questionnaire. Information on the sociodemographic characteristics of the study participants and knowledge- (12 questions),

attitude- (six questions), and practice-related (12 questions) questions on blood donation were included. Data were collected by six junior health care professionals and two senior health care professionals closely followed by the data collection process on a daily basis.

Ethical consideration

The study protocol was reviewed and approved by Haramaya University, College of Health and Medical Sciences Institutional Health Research Ethics Review Committee. Written informed consent was obtained from all the study participants, and confidentiality was maintained during and after the data collection.

Data processing and analysis

Data were entered into EpiData Version 3.1 (EpiData Software, Odense, Denmark) and exported into Stata Version 11.0 (Stata Corp. Ltd., College Station, TX, USA) for data processing and analysis. Then, the data were analyzed using appropriate descriptive and bivariate statistical tests, such as proportion, mean, crude odds ratio, and Pearson chi-square tests. Finally, multivariate logistic regression model was used to determine the predictors of outcome and control of confounding variables. Both the crude odds ratio and adjusted odds ratios (AORs) were reported with their 95% confidence interval (CI), and P -value ≤ 0.05 was considered for statistical significance for all statistical tests. The overall knowledge about voluntary blood donation was assessed using a scoring system. A score of 1 was given to correct responses, and 0 was used for incorrect/do not know responses. Mean value was used to categorize the study participants into two categories. Scores less than the mean value were considered as low knowledgeable, while scores greater than the mean value were considered as high knowledgeable.

Attitude toward blood donation was assessed through six questions. Those who scored less than the mean value were categorized as having poor attitude toward blood donation, and those who scored above the mean value were labeled as having good attitude toward blood donation. Practice in this analysis indicated whether a particular participant has past experience of voluntary blood donation or not.

Results

Sociodemographic characteristics

From the calculated 845 sample size, all the 845 study participants were involved in the study. A total of 338 (40%) participants were in the age group of 31–45 years, more than two-thirds (549 [64.9%]) were females, more than half (444 [52.5%]) were married, and 456 (53.9%) were Orthodox religion followers (Table 1).

Table 1 Sociodemographic characteristics of the study participants among households in three districts of Harar town from July 1 to July 31, 2015

Variables	Variable category	Number	Percent
Age of respondents	18–30 years	215	25.4
	31–45 years	338	40.0
	46–60 years	292	34.6
Sex	Female	549	65.0
	Male	296	35.0
Marital status	Never married	298	35.3
	Married	444	52.5
	Divorced	25	3.0
	Widowed	41	4.8
	Separated	37	4.4
Religion	Muslim	295	34.9
	Orthodox	456	54.0
	Protestant	87	10.3
	Others	7	0.8
Ethnicity	Oromo	197	23.3
	Amhara	396	46.9
	Harari	67	7.9
	Guraghe/Welene	185	21.9
Educational status	Illiterate	43	5.1
	Read and write	40	4.8
	1st to 4th grade	49	5.8
	5th to 8th grade	163	19.5
	9th to 10th grade	165	19.7
	11th to 12th grade	140	16.7
	Diploma	164	19.6
Occupation	Degree and above	73	8.7
	Students	122	14.4
	Employer	208	24.6
	Merchant	127	15.1
	Household	189	22.4
Monthly income	Others	198	23.5
	<1,500 birr	280	38.9
	1,500–3,000 birr	361	50.1

Knowledge of study participants about voluntary blood donation

Out of the 845 study participants, the majority of respondents, 792 (93.7%) had heard about blood donation before the study. Among the study participants who heard about blood donation, most of them, 616 (77.7%), replied that mass media was their main source of information.

Among the 845 study participants, 591 (70%) were aware about the common blood group types. However, the proportion of female study participants who were aware of the types of blood group was lower than that of male respondents (63.6% vs 81.8%, $X^2 = 30.2555$, $P < 0.05$). Nevertheless, only 337 (39.9%) study participants were aware about their own blood group type during the study period. Yet again, the proportion of female study participants who were aware about their own blood group type was significantly lower than that

of male study participants (35.5% vs 48.3%, $X^2 = 13.5009$, $P < 0.05$). In addition, 392 (46.4%) study participants replied that donors can donate their blood every 3 months, although the proportion of female study participants who replied that blood donors can donate their blood every 3 months was significantly lower than that of male study participants (42.8% vs 53%, $X^2 = 8.1012$, $P = 0.004$). Among the 845 study participants, only 221 (26.2%) of them replied accurately regarding the volume of blood to be donated. However, the proportion of male study participants who replied about the correct volume of blood to be donated at a time was significantly higher than that of female study participants (37.8% vs 19.8%, $X^2 = 32.2029$, $P < 0.05$). Approximately one-third ($n = 259$) of the study participants correctly knew that unscreened blood can transmit infection (Table 2).

The overall knowledge of respondents toward voluntary blood donation was 43.55%. Crude and adjusted effects of selected covariates obtained from logistic regression are summarized in Table 3. Age categories of 31–45 years (AOR = 0.50, 95% CI: 0.34–0.74, $P < 0.05$) and >45 years (AOR = 0.60, 95% CI: 0.38–0.95, $P = 0.30$); male sex

Table 2 Study participants' knowledge about voluntary blood donation among households in Harar town from July 1 to July 31, 2015

Variables	Respondents' sex		
	Male, n (%)	Female, n (%)	Total, n (%)
Had you heard about blood donation before the study?			
Yes	285 (96.2.8)	507 (92.35)	792 (93.73)
No	11 (3.72)	41 (7.47)	52 (6.15)
Not sure	0 (0.0)	1 (0.18)	1 (0.12)
Do you know the most common blood group types?			
Yes	242 (81.76)*	349 (63.57)*	591 (69.94)
No	54 (18.24)	200 (36.43)	254 (30.06)
Do you know your own blood group type?			
Yes	143 (48.31)*	194 (35.34)*	337 (39.88)
No	153 (51.69)	355 (64.66)	508 (60.12)
At what interval are blood donors able to donate?			
Once every 3 months	157 (53.04)*	235 (42.81)*	392 (46.39)
Other (once a week, month, 6 months, year)	139 (46.96)	314 (57.19)	453 (53.61)
During blood donation, how much blood should be donated by a donor?			
250 mL–500 mL	112 (37.84)*	109 (19.85)*	221 (26.15)
<250 mL, >500 mL, and I do not know	184 (62.16)	440 (80.15)	624 (73.85)
Do you know how much time is required for the blood donation process?			
<20 minutes	110 (37.16)*	156 (28.42)*	266 (31.48)
>20 minutes and no idea	186 (62.84)	393 (71.58)	579 (68.52)

Note: *Presence of statistically significant difference ($P < 0.05$).

Table 3 Association between study participants' sociodemographic characteristics and an overall knowledge about voluntary blood donation among households in Harar from July 1 to July 31, 2015

Variables	Category	Overall knowledge about voluntary blood donation			
		High, n (%)	Low, n (%)	COR (95% CI)	AOR (95% CI)
Age	18–30 years	74 (20.1)	141 (29.5)	R	
	31–45 years	164 (44.6)	174 (36.5)	0.56 (0.39–0.79)*	0.49 (0.33–0.74)*
	>45 years	130 (35.3)	162 (34)	0.65 (0.45–0.94)*	0.60 (0.38–0.95)*
Sex	Female	273 (74.2)	276 (57.9)	R	
	Male	95 (25.8)	201 (42.1)	2.09 (1.56–2.81)*	1.68 (1.18–2.39)*
Marital status	Never married	110 (29.9)	188 (39.4)	R	
	Married	209 (56.8)	235 (49.3)	0.66 (0.49–0.89)	0.98 (0.65–1.48)
	Divorced	10 (2.7)	15 (3.1)	0.88 (0.38–2.02)	1.83 (0.69–4.84)
	Widowed	23 (6.2)	18 (3.8)	0.46 (0.24–0.89)	1.11 (0.48–2.54)
	Separated	16 (4.4)	21 (4.4)	0.77 (0.38–1.43)	1.21 (0.53–2.77)
Religion	Muslim	137 (37.2)	158 (33.1)	R	
	Orthodox	201 (54.6)	255 (53.5)	1.10 (0.82–1.48)	0.91 (0.58–1.44)
	Protestant	26 (7.1)	61 (12.8)	2.03 (1.22–3.39)	1.37 (0.74–2.57)
	Other	4 (1.1)	3 (0.6)	0.65 (0.14–2.96)	0.37 (0.07–1.96)
Occupation	Student	45 (12.2)	77 (16.1)	R	
	Government employee	53 (14.4)	155 (32.5)	1.71 (1.05–2.77)	1.45 (0.78–2.72)
	Merchant	66 (17.9)	61 (12.8)	0.54 (0.32–0.89)	0.87 (0.47–1.63)
	Housewife	109 (29.6)	80 (16.8)	0.43 (0.27–0.68)	1.06 (0.57–1.97)
	Other	95 (25.9)	103 (21.6)	0.63 (0.39–1.00)	0.97 (0.55–1.71)
Educational status	Unable to read and write	34 (9.3)	9 (1.9)	R	
	Able to read and write	27 (7.4)	13 (2.7)	1.82 (0.68–4.89)	1.63 (0.59–4.54)
	1st to 4th grade	38 (10.4)	11 (2.3)	1.09 (0.40–2.96)	1.07 (0.39–2.96)
	5th to 8th grade	92 (25)	71 (14.9)	2.91 (1.31–6.47)*	2.51 (1.09–5.79)*
	9th to 10th grade	70 (19.1)	95 (19.9)	5.13 (2.31–11.37)*	4.26 (1.82–10.03)*
	11th to 12th grade	43 (11.7)	97 (20.4)	8.52 (3.76–19.31)*	6.99 (2.87–17.04)*
	College completed	49 (13.3)	115 (24.1)	8.87 (3.95–19.87)*	5.78 (2.32–14.40)*
Monthly income	Above college	11 (3)	62 (13)	21.29 (8.03–56.46)*	15.34 (5.01–46.91)*
	<1,500 birr	148 (47.2)	132 (30.9)	R	
	1,500–3,000 birr	137 (43.6)	224 (52.5)	1.83 (1.33–2.51)	1.19 (0.82–1.74)
	>3,000 birr	29 (9.2)	71 (16.6)	1.93 (1.16–3.23)	0.84 (0.43–1.61)

Note: *Presence of statistically significant difference ($P < 0.05$). R=1.

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; R, reference.

(AOR = 1.69, 95% CI: 1.19–2.39, $P = 0.003$); and education status of 5th to 8th grade (AOR = 2.51, 95% CI: 1.09–5.78, $P = 0.029$), 9th to 10th grade (AOR = 4.22, 95% CI: 1.80–9.88, $P = 0.001$), 11th to 12th grade (AOR = 6.96, 95% CI: 2.86–16.91, $P < 0.05$), and college and above (AOR = 15.34, 95% CI: 5.01–46.91, $P < 0.05$) were significantly associated with comprehensive knowledge about voluntary blood donation (Table 3).

Attitude of study participants toward voluntary blood donation

Among the 845 study participants, 798 (94.4%) of them believed that voluntary blood donation is good. The majority of respondents, 741 (87.6%), believed that voluntary non-remunerator donors are the best source of blood. A total of 613 (72.6%) study participants responded that creating awareness among the community could improve

blood services. Most of the respondents, 682 (81.7%), had intention to donate at least once in their life for the future if there is opportunity, and ~660 (78.8%) study participants were willing to be regular donors in the future. The majority of respondents, 753 (90%), suggested that no one can be influenced to donate blood in the future (Table 4).

Among the 845 study participants, only 278 (32.9%) had positive attitude toward voluntary blood donation. Crude and adjusted effects of selected covariates obtained from logistic regression are summarized in Table 5. Being able to read and write (AOR = 0.01, 95% CI: 1.33–11.28, $P = 0.013$) and education status of 5th to 8th grade (AOR = 2.45, 95% CI: 1.10–5.43, $P = 0.028$), 9th to 10th grade (AOR = 3.08, 95% CI: 1.38–6.94, $P = 0.007$), 10th to 12th grade (AOR = 3.47, 95% CI: 1.47–8.19, $P = 0.004$), college level (AOR = 3.06, 95% CI: 1.26–7.44, $P = 0.014$), and university level (AOR = 13.05, 95% CI: 4.12–41.29,

Table 4 Study participants' attitude toward voluntary blood donation among households in Harar town from July 1 to July 31, 2015

Variables	Respondents' sex		
	Male, n (%)	Female, n (%)	Total, n (%)
What do you think about voluntary blood donation?			
Good	521 (94.90)	277 (93.58)	798 (94.44)
Not good	10 (1.82)	5 (1.69)	15 (1.78)
Not good not bad	14 (2.55)	12 (4.05)	26 (3.08)
I do not know	4 (0.73)	2 (0.68)	6 (0.71)
Among different blood donation types which one do you think is the best?			
Voluntary blood donation	486 (88.52)	255 (86.15)	741 (87.69)
Replacement blood donation	20 (3.64)	7 (2.36)	27 (3.20)
Paid/professional blood donors	3 (0.55)	6 (2.03)	9 (1.07)
Blood donation for self	40 (7.29)	28 (9.46)	68 (8.05)
Other	—	—	—
Do you think that something which can affect your health could happen after blood donation?			
Yes	196 (35.70)	125 (42.23)	321 (37.99)
Will not happen	281 (51.18)	139 (46.96)	420 (49.70)
Not sure	72 (13.11)	32 (10.81)	104 (12.31)
Do you think family blood donation is best for the recipient of the same family?			
Yes	448 (81.60)	234 (79.05)	682 (80.71)
No	84 (15.30)	57 (19.26)	141 (16.69)
Not sure	17 (30.10)	5 (1.69)	22 (2.60)

$P < 0.05$) were significantly associated with attitude toward voluntary blood donation.

Study participants' practice regarding voluntary blood donation

Out of the 845 study participants, 191 (22.6%) had ever donated blood. However, the proportion of study participants who ever donated blood with good comprehensive knowledge about voluntary blood donation was significantly lower than the study participants who ever donated blood with low comprehensive knowledge about voluntary blood donation (7.6% vs 34.2%, $X^2 = 83.7863$, $P < 0.05$).

Among 191 respondents who ever donated blood before, 96 (50.3%) donated voluntarily, although subjects with good comprehensive knowledge about voluntary blood donation were less likely to donate blood voluntarily compared to subjects with lower comprehensive knowledge about voluntary blood donation (15.5% vs 26.1%, $X^2 = 12.0593$, $P = 0.001$; Table 6).

With regard to sex, the proportion of female respondents who never donated blood before the study period was significantly higher than the proportion of male study participants (69.2% vs 30.8%, $X^2 = 21.3040$, $P = 0.000$), while ethnicity,

religion, and marital status of the study participants showed no significant difference in voluntary blood donation.

The majority of study participants replied that the most common reasons for not donating blood before the study were "not asked to donate blood" (429 [65.8%]) and "no opportunity" to donate blood (252 [38.6%]).

Discussion

This study revealed that the majority of respondents, 792 (93.7%), had heard about blood donation before the study. This finding was consistent with other studies conducted in South-West Nigeria¹² and Mekelle,¹³ where ~199 (96.9%) and 627 (85.5%) respondents had heard about blood donation, respectively. This study observed that among the study participants who had heard about blood donation, 616 (77.7%) replied that mass media was their main source of information. This finding was supported by studies conducted in Uganda, where electronic media (28%) was a major source of information,¹⁴ and in Nigeria, where mass media was a significant factor for their source of information.¹⁵ However, this finding was not in agreement with the study conducted in Ethiopia (March 1 to 25, 2010) indicating that 292 (39.7%) respondents had disclosed that pamphlets were their main source of information.¹³ The study conducted in Pakistan differently revealed that the main source of information on blood donation were friends and family (65%).¹⁶

The study revealed that the overall knowledge of the study participants of voluntary blood donation was 43.5%. This was comparable with studies conducted in Mekelle, where 380 (51%) respondents had low overall knowledge about voluntary blood donation,¹³ and in Nigeria, which revealed that 432 (46.2%) participants knew some indications for blood transfusion.¹⁸ The overall knowledge regarding voluntary blood donation in this study (43.5%) was higher than that reported by a study conducted in Jordan,¹⁷ where 28.6% of the study participants had good knowledge about blood donation. However, it was lower than that reported by studies conducted in Gondar⁷ 436 (56.8%), in different districts of Nigeria (61%),¹⁸ and (96.9%),¹² where community had adequate knowledge on blood donation.

This study showed that participants aged >45 years had less comprehensive knowledge about voluntary blood donation compared to younger participants (aged 18–30 years), which was consistent with a study conducted in Saudi Arabia, where the highest level of knowledge about blood donation was among the age group of 20–30 years ($P = 0.004$).⁸

Comprehensive knowledge about voluntary blood donation among the study subjects increased gradually with educational status of the subjects as indicated by the fact that the proportion

Table 5 Association between study participants' sociodemographic characteristics and attitude toward voluntary blood donation among households in Harar from July 1 to July 31, 2015

Variable category	Category	Attitude toward voluntary blood donation			
		Positive, n (%)	Negative, n (%)	COR (95% CI)	AOR (95% CI)
Age	18–30 years	71 (25.54)	144 (25.40)	R	R
	31–45 years	119 (42.81)	219 (38.62)	0.91 (0.63–1.30)	1.12 (0.74–1.71)
	>45 years	88 (31.65)	204 (35.98)	1.14 (0.78–1.67)	1.09 (0.52–1.78)
Sex	Female	175 (62.95)	374 (65.96)	R	R
	Male	103 (37.05)	193 (34.04)	0.88 (0.65–1.18)	0.76 (1.52–1.10)
Marital status	Never married	107 (38.49)	191 (33.69)	R	R
	Married	138 (49.64)	306 (53.97)	1.24 (0.91–1.69)	1.25 (1.80–1.94)
	Divorced	9 (3.24)	16 (2.82)	0.99 (0.42–1.33)	1.03 (0.39–3.00)
	Widowed	13 (4.68)	28 (4.94)	1.21 (0.59–2.43)	1.53 (0.62–3.73)
Ethnicity	Separated	11 (3.96)	26 (4.59)	1.32 (0.63–2.78)	1.09 (0.46–2.58)
	Oromo	70 (25.18)	127 (22.40)	R	R
	Amhara	118 (42.45)	278 (49.03)	1.29 (0.90–1.87)	1.44 (0.87–2.40)
	Harari	27 (9.71)	40 (7.05)	0.82 (0.46–1.44)	0.63 (0.32–1.24)
Occupation	Other	63 (22.66)	122 (21.52)	1.07 (0.70–1.62)	1.33 (0.79–2.23)
	Student	47 (16.91)	75 (13.25)	R	R
	Government employee	47 (16.91)	161 (28.45)	2.15 (1.32–3.49)*	1.65 (0.83–3.29)
	Merchant	41 (14.75)	86 (15.19)	1.31 (0.78–2.21)	1.77 (0.88–3.55)
	Housewife	70 (25.18)	119 (21.02)	1.06 (0.67–1.70)	1.03 (0.52–2.01)
Educational status	Other	73 (26.26)	125 (22.08)	1.07 (0.67–1.71)	1.15 (0.62–2.11)
	Unable to read and write	23 (8.33)	20 (3.57)	R	R
	Able to read and write	10 (3.62)	30 (5.35)	3.45 (1.36–8.77)*	3.88 (1.33–11.28)*
	1st to 4th grade	20 (7.25)	29 (5.17)	1.67 (0.73–3.81)	1.73 (0.69–4.36)
	5th to 8th grade	59 (21.38)	104 (18.54)	2.03 (1.03–3.99)*	2.44 (1.10–5.43)*
	9th to 10th grade	62 (22.46)	103 (18.36)	1.91 (0.97–3.76)	3.08 (1.36–6.94)*
	11th to 12th grade	44 (15.94)	96 (17.11)	2.51 (1.25–5.03)*	3.47 (1.47–8.19)*
	College completed	48 (17.39)	116 (20.68)	2.78 (1.39–5.52)*	3.06 (1.26–7.45)*
Monthly income	Above college	10 (3.62)	63 (11.23)	7.24 (2.96–17.76)*	13.05 (4.12–41.29)*
	<1,500 birr	114 (47.11)	166 (34.73)	R	R
	1,500–3,000 birr	99 (40.91)	262 (54.81)	1.81 (1.30–2.53)*	1.45 (0.99–2.13)
	>3,000 birr	29 (11.98)	50 (10.46)	1.18 (0.71–1.98)	0.59 (0.31–1.16)

Note: *Presence of statistically significant difference ($P < 0.05$). R=1.

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; R, reference.

of subjects who completed college and above educational level was significantly higher in terms of overall comprehensive knowledge (AOR = 15.34, 95% CI: 5.01–46.91) than the proportion of subjects who were unable to read and write. This finding was consistent with the studies conducted in Gondar, which indicated that secondary and higher educational status were significantly associated with adequate knowledge toward voluntary blood donation,⁷ and in Saudi Arabia, which reported that the knowledge about blood donation level increased progressively with the increase in the educational level ($P < 0.001$).⁸

In this study, the majority of participants, 798 (94.4%), believed that voluntary blood donation was good, which was comparable with the study conducted in Saudi Arabia (96%), where the study participants agreed that voluntary blood donation is altruistic.⁸

In this study, only 278 (32.9%) participants had positive attitude toward voluntary blood donation, which was higher

than that reported by the study conducted in Mekelle, with the composite measure of attitude, which indicated that only 73 (10%) respondents had highly supportive attitude toward voluntary blood donation,¹³ while it was lower than that reported by the study conducted in Gondar, where 630 (82%) study participants had good attitude.⁷

In the current study, participants with college and above college educational status tended to have significantly higher positive attitude than subjects who were unable to read and write (AOR = 13.05, 95% CI: 4.12–41.29), which was supported by the study conducted in Mekelle, where the study subjects with degree and above degree educational status showed a significant group difference to donate blood in the future ($X^2 = 14.95$, $P = 0.011$),¹³ but not in harmony with the study conducted in Saudi Arabia, where the level of educational status was not significantly associated with the attitude of the study participants toward voluntary blood donation ($P > 0.05$).⁸

Table 6 Association between study participants' overall knowledge about voluntary blood donation and their attitude toward voluntary blood donation practice among households in Harar from July 1 to July 31, 2015

Variable	Practice regarding voluntary blood donation		
	Yes, n (%)	No, n (%)	Total, n (%)
Overall knowledge of voluntary blood donation			
Good knowledgeable	8 (8.3)*	20 (21.1)*	28 (14.7)
Low knowledgeable	88 (91.7)	75 (78.9)	163 (85.3)
Attitude toward voluntary blood donation			
Positive attitude	25 (26)	18 (18.9)	43 (22.5)
Negative attitude	71 (74)	77 (81.1)	148 (77.5)

Note: *Presence of statistically significant difference ($P < 0.05$).

In the current study, only 191 (22.6%) respondents had ever donated blood before the study period. This finding was supported by the studies conducted in Gondar, which revealed that only ~141 (18.4%) study subjects practiced blood donation,⁷ in Nigeria where only 212 (22.6%) respondents had donated blood in the past,¹⁵ and in the northern state of Nigeria where only 15% of the study participants had donated blood.¹⁸ Nevertheless, this was higher than the proportion reported by the study conducted in Mekelle, where only 107 (12.7%) respondents had ever donated blood.⁶ This low proportion of blood donation practice in the community might be due to the fact that most of the subjects have no opportunity to donate blood and most of them were not asked to donate blood.

In this study, among the study participants who ever donated blood before the study period, only half of the study participants, 96 (50.3%), had donated blood voluntarily. The study finding was supported by the study conducted in India¹⁹ (47%), Uganda¹⁴ (37%), Saudi Arabia⁸ (55.6%), and Ethiopia⁷ 68%, where the study participants had donated blood voluntarily. However, it was higher than the proportion reported in Pakistan, where only 29% of the study subjects had donated blood voluntarily.¹⁶ This voluntary participation of the community in voluntary blood donation was not in agreement with studies conducted in Nigeria, where only 1%¹⁵ and 3%¹⁸ of the study subjects donated voluntarily.

In this study, the majority (90%) of respondents replied that no one can be influenced to donate blood in the future. This result was not in agreement with the study conducted in Jordan, which revealed that friends, encouraging media, and religion were influential factors affecting their knowledge and attitudes related to blood donation.¹⁷

The most common reason for not donating blood before the study period was “not asked to donate blood” (429 [65.8%]). This proportion was higher than that reported by

other studies carried out in Uganda¹⁴ (10%), Nigeria¹⁸ (45%), and India¹⁹ (40.75%), where the participants revealed that “lack of an opportunity to donate” was the main barrier.

In this study, subjects with good overall knowledge about voluntary blood donation were less likely to donate blood voluntarily compared to subjects with low overall knowledge about voluntary blood donation. This is in contrast to other studies conducted in Mekelle,⁶ Gondar,⁷ and Jordan,¹⁷ which indicated that respondents who were knowledgeable were more likely to donate blood than non-knowledgeable respondents. This might be because those study subjects with overall good knowledge were not asked to donate blood or there was no opportunity to donate blood due to the lack of a well-established nearby center to donate blood and a regular blood donor motivation program that increases the awareness of the community in the region.

Limitation

The study design was not further supported by qualitative approaches. It would be stronger if we use analytical approaches to assess the level of community knowledge, attitude, and practice regarding voluntary blood donation and complement the study with a qualitative data collection approach.

Conclusion and recommendation

Comprehensive community knowledge was 43.5%, and only 32.9% of the participants had positive attitude toward blood donation. Approximately 77.4% had never practiced blood donation. Age and sex were significantly associated with comprehensive knowledge of participants of voluntary blood donation. Educational status was significantly associated with attitude and comprehensive knowledge toward voluntary blood donation. Subjects with good comprehensive knowledge about voluntary blood donation were less likely to donate blood voluntarily compared to subjects with lower comprehensive knowledge about voluntary blood donation. Therefore, it would be better if the health bureau takes an initiative to increase awareness and practices of voluntary blood donation in the community through different strategies, including mass media, health extension workers, school mini media, and youth centers.

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Author contributions

All authors contributed toward data analysis, drafting and critically revising the paper and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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