Research Article

Prevalence and Predictors of Voluntary Blood Donation Among Adult Ambulatory Patient Attendants at Arba Minch General Hospital, SNNPR Gamo Gofa Zone, Southern Ethiopia, September 2016

Mende Mensa* and Bereket Bassa

Clinical Pharmacist, Arba Minch College of Health Sciences, Ethiopia

Abstract

Background: Blood transfusion is an essential element of health care which saves life. As a result of the advances in clinical sciences and population increase, the need for blood is growing day by day all over the world. One percent of the population should donate blood to meet a nation's basic requirement.

Objective: To assess Prevalence and predictors of voluntary blood donation among adult ambulatory patient attendants at Arba Minch General Hospital, SNNPR Gamo Gofa Zone, and southern Ethiopia

Methods and materials: Descriptive cross sectional study design was employed and semi-structured interview questionnaire was used. The data was coded, cleaned, edited, and analyzed using SPSS version 20. Bivariate and multivariable logistic regression analysis was done to identify the odds of independent variables. All variable with $P<0.05$ during bivariate binary logistic regression analysis were candidate for multivariable binary logistic regression analysis. P value < 0.05 will be declared as statistically significant.

Results: Four hundred twenty four participants were included in this study and 319(75.2%) of them were males. More than half of participants were in the age group of 25-34 years and the mean age of participants was (31.70 ± 6.634) years, 178(42.0%) had good knowledge and 334(78.8%) had positive attitude. Males were 1.1 times more likely [AOR=1.101 (1626, 1.820)], Youths and Young adults in age group 15-24 years [AOR=1.513 (1.131, 2.011)] and in age group 25-34 years [AOR=1.462 (1.094, 2.285)]. Orthodox Christians [AOR=1.29 (1.526, 3.044)], Rural residents [AOR=0.204 (0.220, 0.613)], Participants who completed secondary school [AOR=1.316 (1.270, 3.675)] and Participants having good knowledge about blood donation [AOR=1.56 (2.139, 2.863) were factors influencing voluntary blood donation.

Conclusion: Voluntary blood donation practice and related knowledge in our study were low. Hence it needs collaboration of responsible bodies to improve respondents' knowledge level and voluntary blood donation practice.

ABBREVIATIONS

BB: Blood Bank; BTS: Blood Transfusion Service; ERCS: Ethiopian Red Cross Society; ERCS-NBBS: The Ethiopian Red Cross Society National Blood Bank Services; HBV: Hepatitis B Virus; HFBB: Health Facility-Based Blood Bank; HIV: Human Immune Deficiency Virus; ISBT: International Society of Blood Transfusion; KAP: Knowledge Attitude and Practice; MMR: Maternal Mortality Ratio; RBB: Regional Blood Ban; RHB: Regional Health Bureau; SPSS: Statistical Package of Social Sciences; SSA: Sub Saharan Africa; TTIs: Transfusion Transmissible Infections; VNRBD: voluntary, non-remunerated blood donors; WHO: World Health Organization

INTRODUCTION

Blood transfusion is an indispensable component of health care as it saves millions of lives each year worldwide. As a result of the advances in clinical sciences and population increase, the need for blood is growing day by day all over the world. Blood donation by 1% of the world population is needed to meet a nation's most basic requirements for blood [1].

Non-remunerated voluntary blood donation (VBD) is first line defense against transmission of diseases through his transfusion route. Although many individuals are eligible to donate blood, only one third in US and even fewer donate blood in developing countries [2].

Individuals above 18 years with minimum weight 50 kg can donate every three months if they fulfill the following criteria; absence heart and lung diseases; healthy and feeling well on the day of donation; seizure free at least for six months; completely healed surgery; not pregnant; not lactating and free from HIV virus; viral hepatitis (A, B, or C), malaria, cancer and some drugs like (Isotretinoin, Finasteride) [3-6].

As per 2011 WHO report, 107 million blood donations are collected globally; approximately half of these are collected in the high-income countries, home to 15% of the world's population. Blood donation rate in high-income, middle-income, and low income countries was 39.2, 12.5, and 4.0 donations per 1000 population, respectively [7].

In SSA out of the estimated need of 18 million units of safe blood per year, merely about 15% were collected. Eighty percent of blood for transfusion in sub-Saharan Africa comes from replacement donors even though VNRBD is an important source for transfusion. In Ethiopia, the national requirement for blood is 80,000-120,000 units per year, but only 43% is collected of which only 22% is from VBD, of these 71% were collected from Addis Ababa [8-13].

High dependency on family replacement and remunerated blood donors along with high prevalence of some infectious disease; such as hepatitis B, C and HIV, carries increased risk of transfusion transmissible infection [14,15]. One of priority intervention areas of national blood transfusion service of Ethiopia is conducting operational research on blood donation practice and quality of donated blood [16].

In spite of extensive efforts and a number of blood donation programmes being organized worldwide, the availability of Adequate and safe blood still remains short to meet the increased demand for it mainly in developing countries including Ethiopia. These countries are lagging behind achieving 80-100% voluntary donation target recommended by World Health Organization [17,18].

Study conducted in Bangladesh showed that 168 (34.3%) participants donated blood in some occasions and only 10.4% students have the correct knowledge about the universal donor blood group. The reason for not donating were; not able to donate blood 28.6%, fear 21.1%, not ever asked to donate blood 39.8% , time consuming 4.7% and do not want to donate 4.0% [19].

Study conducted Tamlinadu India showed that most of the donors 89.9% were males. With respect to the marital status of the donors, a majority of them were single (62.3%) and a majority of them were from urban areas (69.3%) [20].

A descriptive study conducted in Kathmandu, Nepal showed that only 23% have donated blood in the past and 172 (86%) of them have donated for family and friends felled by elective surgery and accident 57.5% and 57% respectively. reported barriers of blood donation were; fear of needles and pain, no time for donation, no information, parents do not allow, fear of weakness from blood donation, fear of contracting disease, fear of other adverse effects and don not like the idea of donating were reported barriers of blood donation [21-23].

A cross sectional study in Pakistan showed that 252 (42.00%) had positive attitude towards blood donation and 348 (58%) had negative attitude towards blood donation. It revealed that the difference between male female gender were significant on attitude of blood donation [24]. A cross sectional study Greece showed that 1136 (71.0%) were donors, of which 579 (51.0%) were Voluntary Donors and 557 (49.0%) were Replacement Donors [25].

Study conducted among students of Addis Ababa University showed that only 90(23.4%) have ever donated blood. Among those who didn't ever donated blood lack of information by 68.4%, being not asked by 66.7%, fear by 56% were mentioned as reasons for not donating a blood. This study also revealed that 121 (83.7%) of respondents have high level of knowledge about blood donation [26].

Study conducted in Debre Markos town showed that Practice of blood donation was 12 (16.1%). Majority 436 (56.5 %) were found to be knowledgeable and 403 (52.2 %) were having favorable attitude. The likelihood of blood donation was higher among 18–25 years (AOR = 0.42 95% CI: 0.19, 0.92) and 26–3 years (AOR = 0.26 95 % CI: 0.11, 0.63) of age group compared to the reference group of 45 and above year olds. Participants whose level of education was certificate and above were more likely (AOR = 7.40 95% CI: 3.04, 8.86) to donate blood compared to those who have no formal education and the odds of blood donation was found to be higher (AOR = 3.17 95% CI: 1.90, 5.28) among knowledgeable respondents compared to their counterparts [27].

The study conducted among ambo university regular students revealed that 23.6% had a history of blood donation. Participants who had good knowledge were 2.96 times more likely to donate blood than those with less knowledge [28].

Study conducted in Gonder Town showed that 141 (18.4%), of the respondents had an experience of blood donation. Of those who donated before, 86 (61%) were voluntary donors, while the rest 39% of them were replacement donors. More than half, 94 (66.6%), of donors were male and 630 (82%) of the study participants have good attitude towards blood donation. The major reasons for not donating blood were perception of not being fitted to donate blood (21.2%), lack of information on where, when, and how to donate blood (17%), fear of being anemic after blood donation (12.6%), and fear of health risk after donation (12.3%) [29]. A cross-sectional study conducted on 400 students in Nigeria showed that 64.8% of the respondents had good knowledge about blood donation. About one quarter (25.8%) had poor knowledge on what blood donation entails [30].

Developed countries with well-structured health systems and blood transfusion services based on voluntary blood donation are generally able to meet the demand for blood and blood products. In contrast, in developing and transitional countries like Ethiopia especially in the study area, chronic blood shortages are common. Until now little has been done to factors influencing practice of voluntary blood donation in study area. Therefore, assessing Prevalence and predictors of voluntary blood donation among patient attendants, is important to identify barriers on voluntary blood donation. This will help in identifying areas of focus for

activities which will be taken during community mobilization for blood donation.

METHODS AND MATERIALS

Study Area and period

This study was conducted from [15th- 30th September, 2016] at Arba Minch Hospital, in Gamo Gofa zone; which is located about 505 km south from Addis Ababa, about 275 km from Hawassa, the capital of the SNNPR region. According to the 2007 census, Gamo Gofa Zone has a population of 1,595,570; of this 794,485 were male and 801,085 were female. There are three hospitals and 68 health centers offering health care services for the total population. Arba Minch Hospital is one of these hospitals and is located in Arba Minch Town. The hospital is rapidly expanding in terms of services it provides and infrastructures. It provides multidimensional aspects of care to clients who need health service. There are 6 specialty units (internal medicine, surgery, gynecology/ obstetrics, pediatrics, dentistry, and ophthalmology) run by the hospital.

Study Design

Cross sectional study design was used to collect data from participants

Population

Source population: All ambulatory patient attendants attending Arba Minch hospital during the study period

Study population: Selected ambulatory patient attendants during the study period

Inclusion criteria

- All attendants with age between 18 and 60 years
- Attendants with no known disease condition precluding them from blood donation,
- Interested and willing to participate

Exclusion criteria

- All attendants with age less than 18 and greater than 65years and
- Attendants known to have disease condition precluding them from blood donation

Sample size determination

The sample size was calculated by using single population proportion formula, assuming there was a large population but that we do not know the variability in the population, therefore, assume p=0.5 (maximum variability). Confidence level of 95% (α =0.05, $Z\alpha_{/2}$=1.96) and ± 5% pre cision will be used and finally 10% was added for non-responses.

$$n = (z^2 pq) / e^2 = 385$$

Where;

- n = is the sample size (the desired sample size when target population is ≥10,000)
- Z^2= is the abscissa of the normal curve that cuts off an area α at the tails = 1.96 (1 - α equals at 95% CI)
- e = is the desired level of precision/margin of error
- p= is the estimated proportion of an attribute that is present (p=50%), and q is 1-p.
- Based on this the final sample size become 424

Sampling technique

- ✓ For all patients ambulatory patient attendants the hospital during study period, a single attendant fulfilling inclusion criteria was selected
- ✓ For a patient having more than one attendant fulfilling inclusion criteria, one attendant was selected by lottery method.
- ✓ The data collection was continued until required sample size is attained

Study variables

Independent variables: socio-demographic factors (Age, Educational status, Address, Marital status, Monthly family income, Religion and Ethnicity)

Dependent variables: Factors influencing Voluntary blood donation

Data collection instruments and procedures

Data collection instrument and collection procedures: Semi structured questionnaire was developed after review of relevant literatures, and adapted to local situation and arranged according to the particular objective it can address. The prepared questionnaire has four parts: Part I: Socio demographic data; Part-II: Knowledge on blood donation; Part III: Attitude on blood donation and Part IV: Practice of blood donation. Data was collected through face to face interview of the subjects using semi structured questionnaire by four diploma nurses working the hospital recruited from the same hospital based on their previous data collection experiences.

Data Quality

The questionnaire was pre-tested on 20 participants before the actual data collection, possible amendments were done accordingly and those cases will not be included in the study. Two days intensive training was given for data collectors by principal investigators on how to fill the questionnaire and review the documents. The filled questionnaire was checked every day for completeness by principal investigators and correction was made daily for data collectors.

Data processing and analysis

The data was coded and fed to computer and analyzed using SPSS version 20. Bivariate and multivariable logistic regression analysis was done to identify the odds of independent variables. All variable with P<0.05 during bivariate binary logistic regression analysis was the candidate for multivariable binary logistic regression analysis to see the independent effect of dependent variable on the outcome variable and significant value were declared at P< 0.05.

Ethical consideration

The research was conducted after approval by Arba Minch College of health science ethical review board. Verbal informed consent was obtained from every study participants before the interview by explaining the objective of the research. They were also briefed that the study has no harm or pose any risk except it may take time to respond. All the information collected from the study participants was handled confidentially through omitting their personal identification, conducting the interview in private place and the data was used for the research purpose only.

Plan of dissemination

The result was submitted to Arba Minch General Hospital, Arba Minch College of health sciences and presented on scientific presentation auditorium. Further effort will be made to publish on peer reviewed local or international journals.

Operational definition and definition of terms

Knowledge= Study participant who scores 50% out of the knowledge assessment score components of the questionnaire will be considered to have good knowledge on blood donation.

Attitude= Study Participant who scores above the mean of attitude scoring scale will be considered to have positive attitude on blood donation.

Practice= study participant who previously donated blood at least once will be considered to have practice of blood donation.

Safe blood: means blood that is free from transfusion transmissible diseases, drugs, alcohol, chemical substances, or other extraneous factors that might cause harm or danger to the recipient.

A voluntary non-remunerated blood donor gives blood, plasma or cellular components of his or her own free will and receives no payment, either in the form of cash or in kind which could be considered a substitute for money. This would include time off work other than that reasonably needed for the donation and travel. Small tokens, refreshments and reimbursements of direct travel costs are compatible with voluntary, non-remunerated donation.

Family /replacement donors are those who give blood when it is required by a member of their own family or community. In most cases, the patient's relatives are requested by hospital staff to donate blood, but in some settings it is compulsory for every patient who requires transfusion to provide a specified number of replacement donors on emergency admission to hospital or before planned surgery.

Paid donor: are donors who are paid or remunerated otherwise for their donation.

RESULTS

Socio-demographic data

Total of 424 participants were included in this study and 319 (75.2%) of them were males. More than half of participants were in the age group of 25-34 years and the mean age of participants was (31.70 ± 6.634) years with range 18-52 years. More than one half of participants 262 (61.8%) were orthodox Christians followed by protestants 92 (21.7%); majority 298 (70.3%) were

married; 274 (64.6%) were from urban area; one third 155 (36.6%) of participants were illiterate and 168 (39.6%) earns monthly income between 4501-6500 ETB with mean monthly income of (4611.55 ± 2052.501) (Table 1).

Access to Blood donation information

Majority of respondents 301(71.1%) had exposure information concerning blood donation and main source of information were health institution and media 124 (41.2%) and 98(32.6%) respectively (Figure 1).

Knowledge on Blood Donation

Majority of respondents 347 (81.8%) reported that blood donation saves life and reported conditions which require blood

Table 1: Socio-demographic characteristics of ambulatory patient attendants at Arba Minch General Hospital, September 2016.

|		Frequency	Percent
Sex	Male	319	75.2
	Female	105	24.8
Age	15-24	70	16.5
	25-34	224	52.8
	35-44	117	27.6
	≥ 45	13	3.1
Religion	Orthodox	262	61.8
	Muslim	54	12.7
	Protestant	92	21.7
	Catholic	2	.5
	Others	14	3.3
Ethnicity	Gamo	218	51.4
	Gofa	132	31.1
	Wolayita	31	7.3
	Gurage	38	9.0
	Others	5	1.2
Marital status	Single	75	17.7
	Married	298	70.3
	Separated	24	5.7
	Divorced	21	5.0
	Widowed	6	1.4
Occupational status	Farmer	227	53.5
	Housewife	62	14.6
	Merchant	74	17.5
	Government employee	39	9.2
	Daily laborer	3	0.7
	Private employee	16	3.8
	Othres	3	0.7
Residence	Urban	274	64.6
	Rural	150	35.4
Educational status	Illiterate	155	36.6
	Completed primary school	124	29.2
	Completed secondary school	65	15.3
	Above secondary school	80	18.9
Income	1000-2500 birr	72	17.0
	2501-4500 birr	127	30.0
	4501-6500 birr	168	39.6
	Greater than 6500 birr	57	13.4
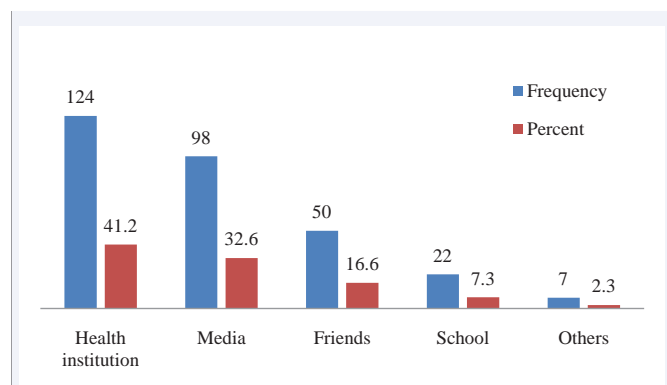
Figure 1 Source of blood donation information among adult ambulatory patient attendants at Arba Minch General Hospital, southern Ethiopia September 2016 (n=301).

donation were labor and delivery 120 (28.3%); anemia 91 (21.5%) followed by accident 80 (18.8%). About one third 120 (28.3%) reported labor and delivery as condition which needs blood donation followed by Anemia 91 (21.5%) and accident 80 (18.9%). More than one half 236 (55.7%) reported that voluntary non-enumerated donors as source blood to be transfused followed by families and friends 142 (33.5%) and 244 (57.5%) reported that non-enumerated voluntary donors were the best donors, only 160 (37.7%) correctly answered the amount of blood donated at a time, 178 (42.0%) correctly answered minimum weight for blood donation while 156 (36.8%) correctly answered minimum age for blood donation. The overall knowledge on blood donation and its importance among study participants were 178 (42.0%) (Table 2).

Attitude questions

Participants were asked a series of attitude to rate their feeling and all shared that volunteers need assessed for fitness before donating blood followed by blood donation saves life 378 (89.2%) and blood donation should not be only for families and friends 366 (86.3%. Overall 334 (78.8%) participants had positive attitude towards blood donation; while the remaining 90 (21.2%) had negative attitude (Table 3).

Prevalence of voluntary blood donation

Less than one third 111 (26.2%) of respondents were donated blood at least once since the study period while 313 (73.8%) were not donated blood. The major reason for donation were voluntarily 65 (58.6%), family and friends needed it 34 (30.6%) and to know the screening status free 12 (10.8%).

The major reason for donating blood were fear of being anemic 149 (47.6%), fear of health problem 52 (16.6%) and fear of weight loss 51 (16.3%) (Figure 2).

Predictors of Voluntary Blood donation

Multiple variable logistic regressions showed that sex, marital status, residence, completion of secondary school and above, having information about blood donation and having good knowledge about blood donation were factors affecting practice of blood donation.

Table 2: Frequency distribution of blood donation knowledge related factors among ambulatory patient attendants at Arba Minch General Hospital, Southern, Ethiopia, and September 2016.

| Blood Donation knowledge related questions		Frequency	Percent
Blood transfusion saves life	Yes	347	81.8
	No	66	15.6
	No idea	11	2.6
Conditions in which blood needed	Accident	80	18.9
	Labor and delivery	120	28.3
	Anemia	91	21.5
	Chronic liver disease	65	15.3
	Malaria	28	6.6
	Severe illness	31	7.3
	Others	9	2.1
Source of blood to be transfused	Voluntary donors	236	55.7
	Families and friends	142	33.5
	Sold by hospital to the patient	23	5.4
	Provided by government	23	5.4
Candidates who can donate blood	Farmer	23	5.4
	Merchant	72	17.0
	Government employee	136	32.1
	Student	23	5.4
	Daily laborer	17	4.0
	Any healthy person	153	36.1
Volume of blood donated at time	Less than half a liter	160	37.7
	More than half a liter	107	25.2
	I don't know	157	37.0
Frequency a person donate blood per year	Once	17	4
	Two times	50	11.8
	Three times	218	51.4
	Four times	139	32.8
Minimum body weight to donate blood	45 kg	131	30.9
	50 kg	178	42.0
	55 kg	53	12.5
	60 kg	62	14.6
Minimum age required to donate blood	17 years	31	7.3
	18 years	156	36.8
	20 years	161	38.0
	22 years	76	17.9
Health conditions precluding blood donation	Pregnancy, ministration and lactation	112	26.4
	Diabetes	82	19.3
	Hepatitis, HIV/AIDS and malaria	230	54.2
The best blood donor type	Non-enumerated voluntary donor	244	57.5
	Replacement family donor	139	32.8
	Paid commercial donor	41	9.7
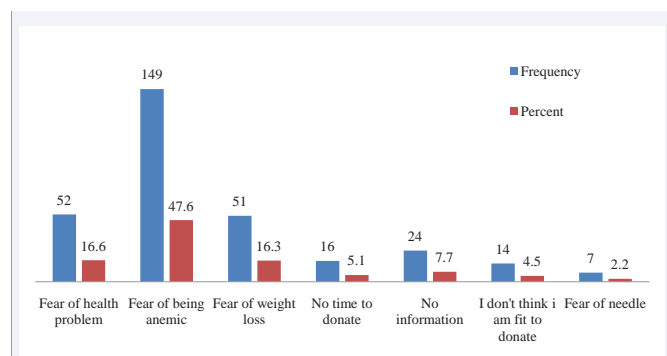
Figure 2 Reasons of not donating blood among ambulatory patient attendants at Arba Minch General Hospital, Southern, Ethiopia, and September 2016 (n=313).

Males were 1.1 times more likely [AOR=1.101 (1626, 1.820)] to donate blood than females. Youths and Young adults in age group 15-24 years [AOR=1.513 (1.131, 2.011)] and in age group 25-34 years [AOR=1.462 (1.094, 2.285)] were more likely to donate blood than older adults. Orthodox Christians were 1.29 times more likely [AOR=1.29 (1.526, 3.044)] to donate blood than other religion followers respectively. Rural residents were less likely [AOR=0.204 (0.220, 0.613)] to donate blood voluntarily than urban residents. Participants who completed secondary school and above were 1.32 times more likely [AOR=1.316 (1.270, 3.675)] to donate blood than illiterate once and Participants having good knowledge about blood donation were 1.6 times more likely [AOR=1.56 (2.139, 2.863)] to donate blood than those with poor knowledge about blood donation (Table 4).

DISCUSSION

This study identified factors influencing practice of voluntary blood donation among adult patient attendants at Arba Minch General hospital. Four hundred twenty four Participants were included in the study and Less than one third 111 (26.2%) of respondents were donated blood at least once since the study

period while 313 (73.8%) were not donated blood. This is higher than similar studies conducted in other parts of the country like; Study conducted among students of Addis Ababa University 90 (23.4%) have ever donated blood [26], The study conducted among ambo university regular students 23.6 % had a history of blood donation [28], Study conducted in Gonder Town 141 (18.4%), of the respondents had an experience of blood donation [29]. However this is lower than different studies conducted outside the country like; study in Greece 1136 (71.0%) were donors [25], study in Bangladesh among university students 168 (34.3%) participants donated blood in some occasions [19]. Relatively higher practice than other studies in Ethiopia could be due to Presence of Arba Minch Blood bank near the Hospital which promotes blood donation through providing information regarding importance of blood donation using local media and it could also be due to variation in study population. On the other hand lower practice when compared to studies outside the country could be explained by variation in study population since the Bangladesh study was conducted among university students, in which most belong to adolescent and young age adult which is major predictor of practice of blood donation in this study and educational status which is another predictor of practice.

The major deterrent for blood donation were fear of being anemic 149 (47.6%); fear of health problem 52 (16.6%) and fear of weight loss 51 (16.3%). This similar with studies conducted in the Bangladesh study 28.6% not able to donate blood, 21.1% due to fear, 39.8% not ever asked to donate blood and 4.7% think that it is time consuming [19]; study conducted in Nepal reported barriers of blood donation were; fear of needles and pain, no time for donation, no information, parents do not allow, fear of weakness from blood donation, fear of contracting disease, fear of other adverse effects and don not like the idea of donating were reported barriers of blood donation [21-23].

The major reason for donation were voluntarily 65(58.6%), family and friends needed it 34 (30.6%) and to know the screening status free 12 (10.8%). This is higher than findings from study conducted in Greece 579 (51.0%) were Voluntary

Table 3: Frequency distribution of attitude towards Blood donation questionnaire score among ambulatory patient attendants at Arba Minch General Hospital, Southern, Ethiopia, September 2016.

S. No	Attitude questions	Positive attitude		Negative Attitude	
		Frequency	Percent	Frequency	Percent
1.	Blood transfusion saves live	378	89.2	46	10.8
2.	Blood donation is your responsibility to help humanity	239	56.4	185	43.6
3	Patient attendants should be asked to donate blood	334	78.8	90	21.2
4	Both male and female donate blood	87	20.5	337	79.5
5.	Both rural and Urban community donate blood	117	27.6	307	72.4
6	Volunteers need assessed for fitness before donation	424	100.0	0	0.0
7	Blood donation affects health condition of a donor	167	39.4	117	27.6
8	Blood donation should be for only families and relatives	366	86.3	58	13.7
9	There should be payment or gift for blood donation	339	80.0	85	20.0
10	Blood donation depends on occupation of a donor	333	78.5	91	21.5
11	Hospitals have enough blood for transfusion	345	81.4	79	18.6

Note: Questions 1-6 were questions of positive nature and participants who responded agree and strongly agree were assigned value "1" as Positive attitude and "0" as negative attitude for strongly disagree and disagree. Similarly questions 7-11 were questions of negative nature and assigned value "1" for strongly disagree and disagree response and "0" for agree and strongly agree.

Mensa et al. (2017)
Email: mendemensa@gmail.com

SciMedCentral

Table 4: Multivariable logistic regression of factors predicting the likelihood of blood donation among adult patients attendants at Arba Minch General Hospital, Southern Ethiopia, September 2016, (n=424).

Experience of blood donation[a]			Experience of blood donation in life time				COR	95% CI for AOR		AOR	95% for AOR		P value[b]
			Yes(n=111)		No (n=313)			LB	UB		LB	UB	
			Frequency	Percent	Frequency	Percent							
Yes	Sex	Male	73	65.8	246	78.6	.571	.366	.890	1.101	1.626	1.820	0.013
		Female (reference)	38	34.2	67	21.4	1	-	-	1	-	-	-
	Age	15-24	65	58.6	5	1.6	.429	.255	.722	1.513	1.131	2.011	.001
		25-34	46	41.4	178	56.9	1.215	.989	1.494	1.462	1.094	2.285	.003
		35-44	0	0.0	117	37.4	.548	.371	.810	0.712	.171	2.973	.064
		≥ 45 years (ref)	0	0.0	13	4.2	1	-	-	1	-	-	-
	Religion	Orthodox	60	54.1	202	64.5	1.380	.210	1.812	1.29	1.526	3.044	.000
		Muslim	12	10.8	42	13.4	1.710	.247	2.596	.548	.643	.048	.000
		Protestant	33	29.7	59	18.8	1.000	.325	3.079	1.215	.250	1.308	.001
		Catholic	0	0.0	2	0.6	1.000	.052	19.360	0.090	.048	8.618	.000
		Others (reference)	6	5.4	8	2.6	1	-	-	1	-	-	-
	Residence	Urban (reference)	75	67.6	199	63.6	1			1			
		Rural	36	32.4	114	36.4	1.290	.859	1.938	0.204	.220	.613	0.004
	Educational status	Illiterate (ref)	37	33.3	118	37.7	1	-	-	1	-	-	-
		Completed 1° school	29	26.1	95	30.4	.679	.394	1.172	.347	0.031	3.883	.027
		Completed 2nry school	21	18.9	44	14.1	.772	.438	1.360	1.316	1.27	3.675	.028
		Above 2nry school	24	21.6	56	17.9	.947	.492	1.826	.322	.028	3.717	.044
	Knowledge	Good knowledge	111	100	67	21.4	.338	.064	1.782	1.56	2.139	2.863	0.0075
		Poor Knowledge	0	0	246	78.6	1	-	-	1	-	-	-
a95% Confidence Interval for experience of blood donation													
bP-value between groups significant at the 0.05 level													

Donors [25] and studies in many countries of SSA, family and replacement donors reach were over 70% [13]. This could be due to variation in socio demographic characteristics of study participants. However this is lower than study conducted in Gonder Town 86 (61%) were voluntary donors [29] and WHO regional target that is 80–100% voluntary donations and for the organization of centralized transfusion [17].

Our study revealed that 178 (42.0%) had good knowledge about blood donation. This is lower than findings from different studies; Study conducted among students of Addis Ababa University 121 (83.7%) of respondents have high level of knowledge about blood donation [26], Study conducted in Debre Markos town 436 (56.5 %) were found to be knowledgeable [27] and A cross-sectional study conducted on 400 students in Nigeria showed that 64.8% of the respondents had good knowledge about blood donation [30]. This could be probably explained by variation in socio-demographic characteristics of study participants and tools used to assess knowledge on blood donation.

In this study 334 (78.8%) participants had positive attitude towards blood donation. This is higher than findings from study in Pakistan 252 (42.00%) had positive attitude towards blood donation and 348 (58%) had negative attitude towards blood donation [24] and study in Debre Markos town 403 (52.2 %) were having favorable attitude [27]. However this lower than study conducted in Gonder Town 630 (82%) of the study participants have good attitude towards blood donation [29]. This could be due to variation in socio-demographic characteristics of study participants and tools used to study attitude towards blood donation.

This study also revealed that Youths and Young adults in age group 15-24 years [AOR=1.513 (1.131, 2.011)] and in age group 25-34 years [AOR=1.462 (1.094, 2.285)] were more likely to donate blood than older adults. This is in line with study conducted in Debre Markos Town the likelihood of blood donation was higher among 18–25 years (AOR = 0.42 95% CI: 0.19, 0.92) and 26–3 years (AOR= 0.26 95% CI: 0.11, 0.63) of age group compared to 45 and above year olds [27]. However this

Mensa et al. (2017)
Email: mendemensa@gmail.com

○SciMedCentral

is different from findings of Gondar town Participants in 31–35 years (AOR= 2.61; 95% CI: 1.6; 4.86) and 36–40 years (AOR = 3.8; 95% CI: 2.0; 7.31) were more likely to donate blood as compared to participants in age range of 20-25 years [29]. The possible reason for this variation might be due to difference in socio-demographic data study population.

In our study Majority 73 (65.76%) of blood donors were males and were 1.1 times more likely [AOR=1.101 (1626, 1.820)] to donate blood than females. This is in line with study conducted in Gonder Town, 94 (66.6%), of donors were male and males were two times more likely to donate blood compared to females (AOR = 1.7; 95% CI: 1.14; 2.54). The possible reason for this difference with regard to donation practice between women and men might be related with knowledge difference. Culturally, the society is male dominated; and there is disparity in access to education between women and men in Ethiopia [29].

Rural residents were less likely [AOR=0.204 (0.220, 0.613)] to donate blood voluntarily than urban residents. This could be due to Urban donors are getting more opportunities in the form of information sharing, contacts, media impact etc, whereas this is less available for the rural population and educational status difference since majority of educated Ethiopian people are residing in urban areas.

Participants who completed secondary school were 1.32 times more likely [AOR=1.316 (1.270, 3.675)] to donate blood than illiterate participants. This finding is similar with finding from Debre Markos town study Participants whose level of education was certificate and above were more likely (AOR = 7.40 95% CI:3.04, 8.86) to donate blood compared to those who have no formal education [27]. This because of improved access to blood donation related information by educated participants than illiterates.

STRENGTH AND LIMITATION

Strength of the study

- Adequate sample size use, Pre-tested tools were used and Data quality was maintained

Limitation of the study

- Being a cross sectional study, it doesn't determine cause and effect.
- The responses might be influenced by socially desirable bias.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Four hundred twenty four Participants were included in the study and less than one third of respondents were donated blood at least once since the study period and more than half of donors donated blood voluntarily. The major deterrent for not donating blood in this study were fear of being anemic; fear of health problem and fear of weight loss. Greater than two third of respondents had exposure information concerning blood donation. Our study revealed that less than half of respondents had good knowledge about blood donation and more than three forth had positive attitude towards blood donation. Respondents Sex, religion, educational status; residence and Knowledge were factors predicting practice of voluntarily blood donation.

Recommendations

Based on the findings of this study the following recommendations were made

1. Less than one third of respondents donated blood in their life time and practice of voluntarily blood donation was below seventy percent. This low practice calls for government and regional blood banks to focus on factors predicting blood donation practice like Age, Sex, Knowledge and educational status of participants

2. Less than half of respondents had good knowledge about blood donation; Design strategies for improving participant's knowledge like mass media, campaigns and dramas.

3. Urban residents donate blood more than rural residents; design strategies that can target rural community to improve blood donation

4. This is cross sectional study and further studies with strong methodology are needed to reveal determinants of voluntarily blood donation practice

ACKNOWLEDGMENTS

We would like to extend our sincere thanks to Mr. Habitamu Samuelour friend and research and publication core process owner of Arba Minch College of health Sciences for his unreserved contribution during information gathering and guidance.

Finally we would like to thank ambulatory patient attendants of Arba Minch General Hospital, for their willingness to cooperate during data collection. Without them this work was not possible. Thank you for allowing us to make things done. Our appreciation also extends Arba Minch College of Health Sciences, for giving us ethical approval letter.

CONTRIBUTION OF RESEARCHERS

Mende Mensa is senior researchers who analyzed and interpreted the findings of this study and he also prepared this document for publication. Bereket Bassa conceived the study and prepared the proposal and collected data and participated in data analysis and presented the work for responsible bodies.

CONSENT FORM

Good morning/Good afternoon/Good evening. My name is _____. I am midwife professionally and now collecting data from ambulatory patient Attendants in Arba Minch General Hospital for the research being conducted by Mende Mensa (Clinical pharmacist and lecturer) on Prevalence and predictors of voluntary blood donation. You are selected to be one of the participants in the study. The study will be conducted through interview. Your name and other personal identifiers will not be recorded on data collection format and the information that you

Mensa et al. (2017)
Email: mendemensa@gmail.com

◉SciMedCentral

give us will be kept confidential and will also be used for this study purpose only. If a report of the result is published, only summarized information of the total group will appear. The interview takes 15 minutes and is voluntary and you have the right to participate, or not to participate or to refuse at any time during the interview. You will not face any problem if you do not agree to the information to be asked and you will not be also denied of getting any medical services from the hospital. Your participation on this study helps to understand the Prevalence and predictors of voluntary blood donation in our community. The output of the study will be used in improving the level of voluntary blood donation, which has paramount importance in reducing maternal deaths. If you have any questions about this study you may ask me or the principal investigator Mende Mensa (Mobile: 0937170976)

❖ Are you willing to participate in the study?

1. Yes 2. No

❖ Interviewer who certified that the informed consent has been given verbally from the respondents

Name_____

Signature _____ Date _____

❖ Completeness checked by:

Name _____

Signature_____ Date_____

REFERENCES

1. Fordham J, Dhingra N. Towards 100% voluntary blood donation: a global frame work for action. WHO, Geneva. 2010.

2. Riley W, Schwei M, McCullough J. The United States' potential blood donor pool: estimating the prevalence of donor-exclusion factors on the pool of potential donors. Transfusion. 2007; 47: 1180-1188.

3. Whittaker S, Carter N, Arnold E, Shehata N, Webert KE, Distefano L, et al. Understanding the meaning of permanent deferral for blood donors. Transfusion. 2008; 48: 64-72.

4. Orton SL, Virvos VJ, Williams AE. Validation of selected donor-screening questions: structure, content, and comprehension. Transfusion. 2000; 40: 1407-1413.

5. Dodd RY, Notari EP 4th, Stramer SL. Current prevalence and incidence of infectious disease markers and estimated window-period risk in the American Red Cross blood donor population. Transfusion. 2002; 42: 975-979.

6. Ottong JG, Asuquo EE, Olaniran NS, Duke FD, Abia RP. Community mobilization for blood donation, Cross River State, Nigeria. Int J Gynaecol Obstet. 1997; 59: S119-S125.

7. WHO. Blood safety and availability: a fact sheet of WHO Media Center. WHO. 2015.

8. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006; 367: 1066-1074.

9. Field SP, Allain JP. Transfusion in sub-Saharan Africa: does a Western model fit? J Clin Pathol. 2007; 60: 1073-1075.

10. Olaiya MA, Alakija W, Afala A, Olatunji RO. Knowledge, Attitude, Beliefs and Motivations towards Blood Donation among Blood Donors in Lagos, Nigeria. Transfus Med. 2004; 14: 13-17.

11. Tapko JB, Toure B, Sambo LG. Status of Blood Safety in the WHO African Region: Report of the 2010 Survey, World Health Organization. Regional Ofce for Africa, Brazzaville, Republic of Congo. 2014.

12. Bates I, Chapotera GK, McKew S, van den Broek N. Maternal mortality in sub-Saharan Africa: the contribution of ine?ective blood transfusion services. BJOG. 2008; 115: 1331-1339.

13. Alfouzan N. Knowledge, Attitudes, and Motivations towards Blood Donation among King Abdulaziz Medical City Population. 2014; 2014.

14. Manikandan S, Srikumar R, Ruvanthika PN. A Study on Knowledge, Attitude and Practice on Blood Donation among Health Professional Students in Chennai, Tamil Nadu, South India. 2013; 3: 3-6.

15. Federal Ministry of Health Ethiopia. National blood transfusion strategy. 2012.

16. WHO, Blood safety and availability: a fact sheet of WHO Media Center, WHO, 2015.

17. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006; 367: 1066-1074.

18. Tagny CT, Mbanya D, Tapko JB, Lefrère JJ. Blood safety in Sub-Saharan Africa: a multi-factorial problem. Transfusion. 2008; 48: 1256-1261.

19. Md. Rezaul Karim, Morshed Alam, Md. Manzur Rahman Farazi, Rubiyat Jafrine Labone. Factors Influencing Blood Donation Behavior of University Level Students in Bangladesh. JIT. 2012; 1.

20. Siromani U, Thasian T, Isaac R, Selvaraj KG, Mammen JJ. Knowledge, Attitudes and Practices of Blood Donors towards Voluntary Blood Donation in Vellore District, Tamilnadu, South India. Austin Emerg Med. 2016; 2: 1013.

21. Bourne PA, Richards S, Holder-Nevins D. Knowledge, Attitude, Practices and Readiness among University Science Students towards Non-Remunerated Blood Donation in a Middle Income Developing Country. TAF Prev Med Bull. 2013; 12: 529-538

22. Amatya DM. Study on Knowledge, Attitude and Practice of Blood Donation among Students of different college of Kathmandu, Nepal. IJPBA. 2013; 4: 42.

23. Sampath S, Ramsaran V, Parasram S, Mohammed S, Latchman S, Khunja R, et al. Attitudes towards blood donation in Trinidad and Tobago. Transfus Med. 2007; 17: 83-87.

24. Mubashir Z, Adeel AK, Muhammad UA, Muhammad AS. Knowledge, Attitude and Practices about Blood Donation among Undergraduate Medical Students in Karachi. J Infect Dis Ther. 2014; 2.

25. Marantidou O, Loukopoulou L, Zervou E, Martinis G, Egglezou A, Fountouli P, et al. Factors that motivate and hinder blood donation in Greece. Transfus Med. 2007; 17: 443-450.

26. Tessema, Hawult Taye. The Level and Associated Factors of Knowledge, Attitude and Practice of Blood Donation among Health Science Students of Addis Ababa University. JMHSR. 2014.

27. Jemberu YA, Esmael A, Ahmed KY. Knowledge, attitude and practice towards blood donation and associated factors among adults in Debre Markos town, Northwest Ethiopia. BMC Hematol. 2016; 16: 23.

SciMedCentral

28. Nigatu A, Demissie DB. Knowledge, Attitude and Practice on Voluntary Blood Donation and Associated Factors among Ambo University Regular Students, Ambo Town, Ethiopia. J Community Med Health Educ. 2014; 4: 315.

29. 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: 7949862.

30. Salaudeen AG, Odeh E. Knowledge and behavior towards voluntary blood donation among students of a tertiary institution in Nigeria. Niger J Clin Pract. 2014; 14: 303-307.