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Blood Donation Practice and Associated Factors among Adults in Rural Kebeles of North Shoa Zone, Oromia, Ethiopia, 2021: A Community-Based Mixed-Method Study

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Abstract

Introduction: For all patients who need transfusions, a healthcare system that promotes regular, voluntary blood donations is essential. In Ethiopia, less than 1% of the population are active blood donors. Even though there is a study in this title, there is no study in rural kebele that includes both qualitative and quantitative methods. Therefore, this study aims to assess voluntary blood donation practice and associated factors among adults in the North Shoa Zone, Oromia, Ethiopia.

Methods: A cross-sectional study using both quantitative and qualitative methods. A multistage sampling technique was used to select 809 respondents, and pretested, interview-administered questionnaires were used to collect the quantitative data. Qualitative data were collected from 32 participants using in-depth interviews. The information was entered into EpiData and analyzed with SPSS. A 95% confidence interval and a P-value less than 0.05 were used to identify predictor variables, and an Adjusted Odds Ratio (AOR) was used to assess the strength of the association. For qualitative data, interviews were digitally recorded, transcribed, and analyzed thematically.

Result: The blood donation practice of the study participant was 9.8% (95% CI: 7.9; 12.0). Educational level: Secondary (AOR=2.91; CI: 1.52; 6.99); college and above (AOR=3.69; CI: 2.41; 10.69); monthly income 4000 (AOR=2.20; CI: 1.17; 5.42); knowledge of blood donation (AOR=2.12; CI: 1.41; 3.53); and positive attitude toward blood donation (AOR=1.97; CI: 1.29; 3.11); were significantly associated with blood donation practice.

Conclusion: The study participants' blood donation practice was low when compared to the World Health Organization's recommendation. Educational level, monthly income, knowledge, and attitude toward blood donation were significantly associated with blood donation practice. Therefore, it is very important to improve awareness and attitudes toward blood donation. Health authorities should collaborate with rural communities to organize blood donation campaigns to provide opportunities for altruistic blood donation.

Keywords: Qualitative, Quantitative; Rural; Voluntary blood donors; Practice; North Shewa; Oromia

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Introduction

Every year, safe blood saves millions of lives [1,2]. The transfusion of safe, high-quality blood from willing, unpaid blood donors is known as voluntary blood donation [3]. Those who have lost a considerable amount of blood from surgery, obstetric and gynecological bleeding, accident, symptomatic anemia, illnesses, or cancer depend on donated blood donations to survive [4,5]. Recruitment of safe donors is a challenging task; it is necessary that people realize that blood donation is their responsibility. No blood bank, hospital, or government can sustain health care without adequate blood from such donors, and blood donor organizations play a very crucial role in this endeavor [4].

Blood cannot be synthesized artificially; human beings are the only source of this life-saving product. But a shortage of safe blood in several developing countries often leads to unnecessary deaths or ill health. Hence, there is an urgent need for more people to donate blood on a regular basis to save precious lives. The shortage of blood and the risk of often fatal infections can be considerably reduced by promoting voluntary, non-remunerated blood donations [3].

Globally, each second someone needs blood for surgery, trauma, severe anemia, or a complication

of pregnancy [6]. According to the World Health Organization (WHO), voluntary, non-remunerated blood donation is a certain approach to ensuring a sufficient supply of safe blood to meet the national requirement for blood transfusions [3]. However, only 62 countries have blood supplies based on close to 100% voluntary, non-remunerated blood donation [7]. 112.5 million blood donations are collected every year globally, whereby about half of them are from the developed countries, which is just 19% of the world's population. The blood donation rate in developed countries is 33.1 per 1000 people as compared to 4.6 donations per 1000 people in developing countries [8].

In Ethiopia, less than 1% of the population are active blood donors [9]. There have been insufficiencies and inequities in access to blood. Each year, 25% to 40% of Ethiopian mothers die due to a lack of enough blood from donors [9,10].

According to an Ethiopian Ministry of Health report, 223,000 units of blood were collected in 2019/2020, accounting for only 22% of the required amount by WHO standards. In Ethiopia, blood donation practice among students and health professionals was relatively higher, ranging from 23.6% to 32.6%, compared with the general public, which was in the range of 18.4% to 26.4% [5,11,12].

The practice of blood donation is lower compared with knowledge and attitude in different parts of the Oromia region. According to the 2013 North Shewa Health Bureau report, the North Shewa Zone Plan calls for collecting from 0.1% of the total population of the zone (1600 units of blood) and achieving only 13% of the plan (208 units of blood). Despite the fact that blood donation is a major issue, no research has been conducted on blood donation practices in rural kebele of the Oromia region's North Shewa zone. As a result, the factors influencing voluntary blood donation should be identified. So, this study aims to assess voluntary blood donation practice and associated factors among adults in the North Shoa Zone, Oromia, Ethiopia.

Methods and Materials

Study design, period and study setting

Community based mixed qualitative and quantitative Cross-sectional study was conducted in North Shoa Zone of Oromia from January 1st to February 30th, 2021. North Shewa is one of the 18 Zonal Administration of Oromia regional state. It is bordered on the south by Oromia Special Zone Surrounding Finfinnee, on the southwest by West Shewa, on the north by the Amhara Region, and on the southeast by East Shewa. Fiche is the capital city of north Shewa zone of Oromia region. It is located 114 kms from the capital city of Ethiopia, Addis Ababa. The zone has an area of 8990 km^2 accounts for about 2.5% of the total area of Oromia. It is located between 9o05' and 10o23'N latitude and 37o57' and 39o28'E longitude. About 20.7%, 42.6% and 36.7% of the total area of the zone is covered by tropical (Kolla), Sub-tropical (Woina Dega) and temperate (Dega) agro-climatic zones respectively. According to Population Projection of Oromia Region in 2014 North Shewa zone has a total population of 1,782,154 of which 891,814 (50.04%) are males and 890,340 (49.96%) are females. The total rural population of North Shewa Zone are 1,564,905 from these 786,140 (50.2%) are males and 778,765 (49.8%) are females. There are Thirteen woreda in north Shwa Zone and the study was conducted at rural kebeles of Hidabu Abote, Debre Libanos, Girara Jarso and Wuchale Wereda of North Shewa Zone in Oromia region. There is no blood bank in north Shewa zone, So the collected blood was sent to Woliso blood bank. According to North Shewa health bureau report in 2013 the zone plan to collect from 0.1% of the total population of the zone (1600 Unit of blood). But achieve only 13% of the plan (208 units of blood) (North Shewa zone health bureau, 2021).

Source and study population

The source populations were all adults age 18 to 65 years in rural kebele of North Shewa Zone of Oromia region. Those adults who lived in the selected rural kebeles at least for six months during data collection period were study population.

Sample size determination

The total sample size was calculated by using single population proportion formula [$n = (Z\propto/2)^2\ p\ (1-p)/d^2$ by considering the assumption; the prevalence of practice toward blood donation (48%) from study in Mekele, Northern Ethiopia study which give the larger sample size [13], 95% confidence interval, 5% margin of error, the sample size was found to be 842 after considering 10% non-response rate and design effect of two.

Sample size for qualitative part

Considering previous research can establish useful rules of thumb for estimating sample sizes in qualitative research [14]. We determine that 40 participants were adequate, in line with Morse's [15], approximate number of interviews required for one to expect to have obtained adequately rich data when using a semi-structured interview approach.

Study variables

Dependent variable: The dependent variable of this study was practice of the blood donation. The independent variable assessed in this study included knowledge of blood donation, attitude of blood donation, socioeconomic factors like sex, age, educational status, marital status and income; knowledge related factors including knowledge on place of blood donation, knowledge on interval of blood donation, knowledge on age to start blood donation, knowledge on risk of blood donation; attitude related variable such as thought about voluntary blood donation, thought about problem after voluntary blood donation; practice related factors are history of donation, frequency of donation, reason of donation, reason for not donating and type of donation; health system related factors including:- Availability of blood donation centers, Accessibility to blood donation centers, Conduciveness of the blood donation center and Health education of the public about blood donation.

Sampling procedure

A multi-stage sampling technique was used to recruit the study participants. At stage one, four woredas from the zone's total of thirteen woredas were chosen using a simple random sampling technique. Then three rural kebele from each selected woreda were recruited by simple random sampling. A systematic random sampling technique was used at stage three to select households with proportional allocation to the size of the kebeles. Finally, the lottery method was employed to select one study participant for households with more than one eligible individual. For the qualitative part, a convenient sampling method was used. Participants were selected from various parts of the community, including the school's leader, community leader, and model farmer.

Measurement

Knowledge: Knowledge about blood donation was assessed using knowledge related questions which are considered to be known by

general population like place of blood donation, importance of blood donation, and eligibility for blood donation. Each response was scored as "1" for correct response and "2" for incorrect response. Knowledge scores for individuals was calculated and summed up to give the total knowledge score. Participants who correctly responded to more than 50% of knowledge assessing questions was considered as having adequate knowledge about blood donation, whereas those who scored <50% was considered as having inadequate knowledge about blood donation [13,16].

Attitude: Those who score mean and above for attitude question was labeled as having 'favorable attitude', otherwise 'unfavorable attitude [16,17].

Practice: having at least one history of blood donation was used to label them as having practice [18].

Data collection for quantitative data

Data was collected by the interview method using a structured and pretested questionnaire. The questionnaire is first prepared in English, then translated into Affan Oromo, then translated back to English by another person to check its consistency. The questionnaire has five parts, including sociodemographic-related items like sex, age, marital status, education status, religion, and monthly income, a knowledge question, a behavior question, and a practice question. As data collectors and supervisors, twelve diploma nurses and four BSc nurses were hired.

Data collection for qualitative data

After obtaining consent, we proceeded with interviewing participants using a semi-structured interview schedule. The key questions were asked to elicit behavioral beliefs. Where necessary, we augment the primary questions with gentle probes so that participants can elaborate on their responses. All responses were audio-recorded with the permission of the participants. We took an average of 15 min to complete a single interview.

Data Quality Control

The questionnaire was prepared in English and translated into Affan Oromo to increase understanding of the respondents and translated back to English to keep consistency of the question. The sample of questionnaire was pre-tested on 5% of the sample size out of the study area. The pre-test was done to ensure clarity, wording, and logical sequence and skip pattern of the questionnaire. Essential amendment was taken. Training was given to the data collector and supervisor on objective of the study, technique and procedure that they followed during interview. Close supervision was done by supervisor and principal investigator.

Operational Definitions

Blood donation: Refers to the process of collecting blood from someone, testing, preparing, and storing blood and blood components.

Voluntary blood donation: Refers to when a person agrees to have blood drawn and used for transfusions or made into biopharmaceutical medications.

Voluntary non-remunerated blood donor: A person who donates blood (and plasma or cellular components) of his/her own free will and receives no payment for it, either in the form of cash, or in kind which could be considered a substitute for money.

Adequate knowledge on blood donation: Participants who correctly responded to more than 50% of knowledge assessing questions.

Favorable attitude on blood donation: Those who score mean and above for attitude question of blood donation.

Having practice of blood donation: having at least one history of blood donation was used to label them as having practice.

Knowledge: The degree of understanding and awareness the people possess regarding blood donation and its advantages.

Attitude: According to this study attitude refers to opinions, beliefs and feelings expressed by people regarding the merits of blood donation.

Data Management and Analysis

The collected data was entered using Epi-Data version 4.6 (The EpiData Association, Odense, Denmark) and exported to SPSS 23 software for cleaning, recording, categorizing, and analyzing. A bivariate analysis was done to see the association between independent and outcome variables. Those variables with a P-value of 0.2 during the bivariate analysis were included in the multiple logistic regression analysis to assess the relative effect of confounding variables. Since the outcome variable is categorical, the adjusted odds ratio was calculated through a multiple logistic regression model. After multivariate analysis had been done, the adjusted Odds Ratio (OR) was used to measure the strength of association between the dependent variable and the independent variable, while the 95% CI and P-value were used to assess whether the association was significant. The qualitative data was analyzed manually. The tape recordings from the in-depth interview were transcribed verbatim, and the transcripts were coded thematically. Next, similarities were identified, differences resolved, and consensus was achieved. Verbatim passages were selected from the transcript to illustrate the themes.

Result

Quantitative findings

Sociodemographic characteristic of study participants: A total of 809 participants were included in the study (418 males and 391 females), with a response rate of 96%. The mean age of the participants was 33 years (SD 8.6). Five hundred ten (63%) of the participants were orthodox, and 27% of the study participants were farmers by profession. Two-thirds of the participants were orthodox religious followers. Concerning the educational level of participants, about 30% of them attended primary and secondary educational levels. About 40% of the participants had a monthly income of 1,000 to 2,000 ETB (Table 1).

Knowledge of study participant

From the total study participants, about 54% of them (n=435) had not heard about blood donation. About 32% and 28% of participants learned about blood donation from television and health professionals, respectively. Nearly 86% of the study population didn't know the most common blood group type, and 91% of participants didn't know their own blood group type. 23% of the study participants mentioned that the interval for blood donation was once every 3 months, while 55% didn't know the interval for blood donation. Three-fourths of the participants had no idea how much blood to donate to the recipient (Table 2).

Table 1: Sociodemographic characteristics of study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Variables	Frequency (n)	Percentage (%)
Age		
<20	205	25.3
20-25	180	22.3
25-30	130	16.1
30-40	124	15.3
40-50	91	11.2
≥ 50	79	9.8
Sex		
Female	391	48.3
Male	418	51.7
Marital status		
Single	194	24.0
Married	510	63.0
Divorced	61	7.6
Widowed	30	3.7
Separated	14	1.7
Occupation		
Merchant	173	21.4
Private employee	72	8.9
Gov't employee	59	7.3
Student	128	15.8
Farmer	220	27.2
Housewives	157	19.4
Religion		
Orthodox	605	74.8
Muslim	164	20.3
Protestant	36	4.4
Others	4	0.5
Education level of the participant		
No formal education	220	27.2
Primary	236	29.2
Secondary	227	28.0
College and above	126	15.6
Family income		
<1000 ETB	85	10.5
1000-2000 ETB	321	39.7
2000-3000 ETB	164	20.3
3000-4000 ETB	123	15.2
≥ 4000 ETB	116	14.4

ETB; Ethiopian Birr

Attitude of study participant

From all the study participants, about 58% of them mentioned that voluntary blood donation was good. About one-third of the study population indicated that voluntary blood donation was appropriate. The majority of participants mention how blood donation affects the health of the donor. About 72% and 59% of the study population stated that blood donation was not a moral duty and that blood donation is harmful to the donor, respectively. About 42% of the

Table 2: Knowledge of blood donation among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Knowledge assessment item	Response	Frequency	Percentage
Heard about blood donation	Yes	374	46.2
	No	435	53.8
Sources of information about blood donation	Social media	34	9.1
	Television	117	31.5
	Radio	87	23.4
	Health professional	104	28
	Friends/ relatives	26	7
	Educational leaflet	6	1
know the most common blood group type	Yes	115	14.2
	No	694	85.8
Participant know blood group type	Yes	76	9.4
	No	733	90.6
Participant blood group type	A	8	10.5
	B	19	25
	AB	19	25
	O	30	39.5
Interval to blood donation	Once every 3 months	183	22.6
	Once a week	54	6.7
	Once a month	45	5.6
	Once every 4 months	86	10.6
	No idea	441	54.5
The volume of blood donates	250 ml-50 0ml	108	13.4
	<250 ml	47	5.8
	>500 ml	30	3.7
	I don't know	624	77.1
Place of blood donation	Yes	265	32.8
	No	544	67.2
Minimum age for blood donation	<18	14	1.7
	18	102	12.6
	19-30	139	17.2
	>30	13	1.6
	I don't know	541	66.9
Minimum weight for blood donation	<45	12	1.5
	45	67	8.3
	46-50	151	18.7
	I don't know	579	71.6
Pregnant women donate blood	Yes	170	21
	No	639	79
Women with menstruation donating blood	Yes	189	23.4
	No	620	76.6
Lactating women donate blood	Yes	257	31.8
	No	552	68.2
Diabetic people donate blood	Yes	194	24
	No	615	76
HIV/AIDS person can donate blood	Yes	70	8.7
	No	739	91.4

Table 3: Attitude of blood donation among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Attitude assessment tool	Response	Frequency	Percentage
Voluntary blood donation	Good	466	57.6
	Not good	170	21
	I don't know	173	21.4
Type of blood donation	Voluntary	602	74.4
	Replacement	20	2.5
	Paid	19	2.4
	Self	18	2.2
	I don't know	150	18.5
Blood donation affects health	Yes	473	58.5
	No	176	21.7
	Not sure	160	19.8
Blood donation is best for the recipient of the same family	Yes	422	52.2
	Not	225	27.8
	Not sure	162	20
Blood donation is a moral duty	Yes	28	28.2
	No	581	71.8
Blood donation is harmful to the donor	Yes	473	58.5
	No	336	41.5

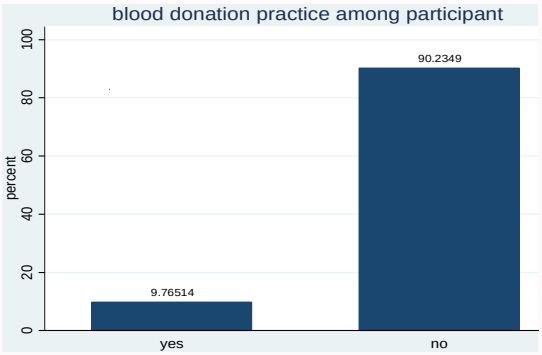

Figure 1: Practice of blood donation among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021.

study participants had a good attitude about blood donation (Table 3).

Blood donation practice of participant

Less than one-quarter, 79 (9.77%) of the respondents, had experience with blood donation, while the rest of the participants, 730 (90.23%), had never donated blood before (Figure 1). Of those who donated before, 79 (100%) were voluntary donors. Fear of pain (38.7%), fear of anemia (19%), fear of weight loss (17.5%), not being accessible (9%), and no one asking for it (8%), were the top reasons given for not donating blood by non-donors (Table 4).

Factor associated with blood donation practice

In bivariate analysis, age of the participant, occupation, educational level, monthly income, knowledge about blood donation, and attitude of the participant toward blood donation were associated with the blood donation practices of the respondents. To select variables for multivariate analysis, those with a P-value of less than 0.25 were included, so six variables were eligible for multivariate analysis: Age, occupation, educational level, monthly income, attitude toward blood donation, and knowledge of blood donation practice. The Variance Inflation Factors (VIF) test value of the independent variables ranged from 2.13 to 9.87, and the tolerance test value ranged from 0.469 to 0.10. These show that there was no multicollinearity among the independent variables that the Hosmer-Lemes how test found to be non-significant, which had a p-value of 0.341 and an R-square value of 72.4% (Table 5, 6). After multivariate analysis, the factors that were significantly associated with blood donation practice were educational level, monthly income, knowledge of blood donation, and attitude toward blood donation (Table 7).

Table 4: Practice of blood donation among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Practice assessment tool	Option	Frequency	Percentage
Reason for not donating	Not think of it	21	2.9
	No one asks for	58	7.9
	Fear of pain	262	35.9
	Fear of anemia	143	19.6
	Fear of weight loss	132	18.1
	Fear of sight of blood	30	4.1
	Not accessible	84	11.5
Reason for blood donation	To save patient	48	60.8
	To save family	27	34.2
	Without no reason	4	5
Frequency of blood donation	Once	71	89.9
	Twice	8	10.1
Ever donate blood during the COVID-19 pandemic	Yes	30	3.7
	No	779	96.3
Reason for not donating after COVID-19	I have no reason	98	12.1
	I have a medical reason	121	15
	Afraid of acquiring COVID-19	456	56.4
	It was difficult for me to leave the home	134	16.5

Qualitative finding

In-depth interview was conducted among 32 participants form these 18 were men and 14 were women.

Knowledge of blood donation

About one-third of the participants of In-depth interview have heard of blood donation. To them, it is an action intended to save a life or assist someone who is in need.

"Blood donation is the act of going to a hospital to give blood in order to help a patient who needs it now or in the future" (Male, 38 years).

Although the majority of them were unable to pinpoint their main informational sources, they named the media, their friends, their families, and their teachers as potential sources. Regarding the requirements for blood donors, all parties concurred that both sexes could donate blood.

"A healthy adult must be at least 18 years old to give blood" (Male, 34 years).

Participants who were female said that donors should be between the ages of 25 and 50. Both teams concurred that men made for

Table 5: The relation of Sociodemographic, knowledge and attitude related variables with the practice of blood donation among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Variables	Response	Blood donation Practice		Df	X^2	P-value
		Yes	No			
Age	<20	10	195	5	2.37	0.01
	20-25	30	150			
	25-30	15	115			
	30-40	11	105			
	40-50	8	82			
	≥ 50	5	73			
Sex	Male	47	371	1	0.93	0.23
	Female	32	359			
Marital status	Single	22	172	4	6.4	0.24
	Married	49	461			
	Divorced	6	55			
	Widowed	1	29			
	Separated	1	13			
Occupation	Merchant	16	157	5	19.31	0.04
	Private employee	7	65			
	Gov't employee	19	40			
	Student	21	107			
	Farmer	9	211			
	Housewives	7	150			
Religion	Orthodox	58	547	3	3.4	0.494
	Muslim	13	151			
	Protestant	7	29			
	Others	1	3			
Educational level	No formal education	9	211	3	16.99	0.001
	Primary	14	222			
	Secondary	31	196			
	College and above	25	101			
Monthly income	<1000	9	76	4	26.74	<0.001
	1000-2000	20	301			
	2000-3000	14	150			
	3000-4000	12	111			
	≥4000	24	92			
Knowledgeable	Yes	48	292	1	12.5	<0.001
	No	31	437			
Attitude	Good	46	294	1	9.43	0.002
	Not good	33	436			

superior blood donors, though. Male participants generally agreed that blood donations should be made at intervals of six months, but female participants generally agreed that donations should only be made once a year because they were worried about a donor becoming anemic.

"Women already lose blood via our monthly period every month, so for her own safety, she can donate blood once a year to ensure that she, too, won't pass out" (Female, 29 years).

Health issues that could require a blood transfusion

The participants were aware that serious accidents and extensive bleeding after childbirth may require a blood transfusion.

"Patient is caused by blood shortage and so always need blood donation" (male, 47 years).

Participants' views on blood transfusions, as well as the potential advantages and security of blood donation to donors.

Majority of both sides argued that donated blood is only safe for a patient if it has undergone testing. Concern over the possibility of transmission of infection during transfusion gripped the female volunteers.

The participants stated that only if the donors are anemic could blood donation result in any risks for the donors.

"The donor is not harmed, but he must consume stout, malt, or red tablets with milk" (male, 37 years).

Both males and females in this study agreed that there are no advantages for the donor and it can cause weight loss, anemia and infection from donors.

Cultural and religious prohibitions on blood donation

The participants' religious backgrounds either supported or had no opinion on the matter of blood donation.

"Blood donation is not against my religion's or my denomination's (Orthodox Church) teachings" (Female, 34 years).

"We received no information regarding the benefits or drawbacks of blood donation" (Male, 41 years).

The participants were unaware of any local cultural practices that forbade blood donation.

"Ayantu was a rural woman and there are no traditions that forbid blood donation" (woman, 35 years).

Participants' knowledge of local blood donation facilities

In contrast to the female participants, who exclusively listed hospitals and laboratories as potential locations for blood donations, the male participants believed that blood could be donated in hospitals, schools, health centers, open spaces, and other safe places.

"Any hygienic location is suitable for blood donation" (male, 31 years).

Blood donation experiences of participants

Only three of the eighteen male participants had previously donated blood. The donation was made on a voluntary basis. However, none of the female volunteers had never given blood before.

"I donated blood for my wife during her pregnancy" (male, 43 years). some of the male participants who had ever donated blood said they felt no discomfort after donating blood apart from pain at the donation site and a little drowsiness. "Giving out roughly 50 cl of blood, the equivalent of a pea, was challenging. Water sachet that is pure. I felt sleepy" (male, 31 years). A blood transfusion had never been given to any of the volunteers.

Reasons why some participants did not donate

For those who have never given blood, among the excuses they cite for not doing so are forgetfulness, a lack of opportunity, and a worry about unfavorable outcomes.

Table 6: Key themes drawn from qualitative interviews with community members in rural kebeles of north Shoa, Oromia, Ethiopia 2021.

Knowledge to blood donation	Good knowledge	"Blood donation is excellent for people's health since it allows us to use it in the main hospital for patients who lack blood. It lengthens a person's life span" [17].
Perceptions of Blood Donation	Positive perception	"Blood donation is a moral duty and it was not exposed to infection" [15].
Safety of Blood Donation	Secure Blood Donation Techniques	"I don't believe I can contract any infections during the blood donation process because each donor receives a fresh needle, barring the possibility that the person collecting the blood has malicious intentions to infect. But since everyone receives a new needle and it is discarded after each donation, the procedure of giving blood is clean and safe" [6].
Low community blood donation practice	Absence of information community outreach program	"Yes, if given the chance... While one can go and make a donation, visiting the hospital is difficult. If they could take such outreach efforts to the neighborhood and market, perhaps" [22].

"I'm not confident about giving blood. Have you not observed some blood donors who experience issue?" (Female, 29 year) (Table 6).

Discussion

The aim of the study was to assess blood donation practice and associated factors among adult in rural kebele of North Shoa Zone of Oromia region.

From all study participant only 79 (9.8%, 95% CI 7.9%-12.0%)" of them had practice of blood donation. This was lowered than studies done among adult residents of Harar town in Eastern Ethiopia 22.6% [11], in Gondar Town, Northwest Ethiopia 18.4% [19], in Debre Markos town Amhara region 16.1% [18], among Ambo University Regular Students in Ambo Town 23.6% [20], Adama town central part of Ethiopia [21], among medical and paramedical personnel in Alert Hospital in Ethiopia 36% [22], in Jigjiga Town, Somali Region, Ethiopia 18.9% [1] among health care workers in Ethiopia 21.6 [8], in Nefas Silk Lafto sub city, Addis Ababa, Ethiopia 34.2% [23]. This was due to the study population in this study was from rural community, they got less information about blood donation compared with those live in town and variation in characteristics like educational level, knowledge status and attitude for blood donation.

In this study among blood donors 89.9% of them donate blood once in their life time. There is no similar finding is in line with this study done. This may due to this study done in rural kebele and no other study in similar setting.

But it is not similar with study among civil servant done in Chiro town in Western Hararghe [24], in Gondar Town, Northwest Ethiopia [5], among adults in Debre Markos town, Northwest Ethiopia [18], study done in Adama Town, central Ethiopia [16] and study done in northern India [25].

This may be due to difference in study setting since this done in rural community, occupation difference and education level difference, for instance in this study 27.2% of the study participants had no formal education, however study done chiro the participant were civil servant might have better information about blood donation so, donate blood more than one unlike this study.

In this study all of the donors were donate voluntarily, the finding was higher compared with studies done Chiro town, Western Hararghe, Gondar town, northwest Ethiopia, in Debre Markos town, Northwest Ethiopia. The difference may be due to the setting difference and sample size difference.

Factors significantly associated with blood donation practice

According to the finding in this study factor that were significantly associated the dependent variable after controlling the potential confounder were educational level of participant, monthly income, knowledge about blood donation and attitude for blood donation practice.

Being educational level of secondary, college and above were positively associated blood donation practice.

Study participant who had secondary educational level were about three times more involve in blood donation and who attended college and above level were about four times more participate in blood donation practice compared with those who had no formal education. This is in line with the study among adult residents of Harar Town, Eastern Ethiopia [11], among adult population towards blood donation in Gondar Town, Northwest Ethiopia [19], and study done in Debre Markos town, Northwest Ethiopia [20-26]. This may be due to as educational level increase the opportunity to get more knowledge about blood donation and better understand the importance of blood donation.

The study participant who had monthly income of four-thousand and above were two time more likely to donate blood compared with those we got 1,000 and less monthly. The reason behind this finding was may be due to those who have more income were more access for information about blood donation as they may had television and different electronics material to get information.

This finding was not in line with the study done among adult residents of Harar town, Eastern Ethiopia [11], this may be because of study period difference and not similar attitude about blood donation.

In current study knowledge about blood donation was positively associated with practice of blood donation. Those who had knowledge of blood donation were about two time more donate blood compared with the participant had no knowledge of blood donation.

This is similar with the study in Debre Markos town North west Ethiopia [26], Harar, Ethiopia [11], Adult Population towards Blood Donation in Gondar Town, Northwest Ethiopia [19].

This is might be due to as the participant understand the importance of blood donation and advantage of donating blood, they were more participate in blood donation. Also, knowledge of blood donation is pre-requisite in obtaining access to and providing voluntary blood donation timely and effectively.

According to this study those who have positive attitude were positively associated with the blood donation practice. Study participant with good attitude of blood donation where two time more donate blood than counterpart. This is because this help to avoid fear and build confidence to donate blood. This is supported similar study conducted in Mekele, Northern Ethiopia [13] among adults in Debre Markos town, Northwest Ethiopia [26], Adama town Central Ethiopia [21].

Table 7: Logistic regression result of blood donation practice with sociodemographic characteristics, knowledge and attitude among study participants in rural kebeles of North Shewa, Oromia, Ethiopia, 2021 (n=809).

Variables	Blood donation practice		COR (95% CI)	AOR (95% CI)	P-value
	Yes	No			
Age					
<20	10	195	1	1	
20-25	30	150	3.90 (1.85;8.23)	2.90 (0.57;5.23)	0.102
25-30	15	115	2.54 (1.11;5.85)	1.50 (0.11;2.89)	0.098
30-40	11	105	2.04 (0.84;4.97)	1.04 (0.84;3.97)	0.109
40-50	8	82	1.90 (0,73;4.99)	1.60 (0,73;4.79)	0.078
≥ 50	5	73	1.34 (0.44;4.04)	1.31 (0.44;4.01)	0.798
Sex					
Male	47	371	1.42 (0.89;2.28)	1.22 (0.69,2.18)	0.103
Female	32	359	1	1	
Marital status					
Single	22	172	1	1	1
Married	49	461	0.83 (0.49;1.42)	0.63 (0.39;1.22)	0.198
Divorced	6	55	0.85 (0.33;2.21)	0.55 (0.13;2.11)	0.097
Widowed	1	29	0.27 (0.04;2.08)	0.17 (0.02;1.98)	0.178
Separated	1	13	0.60 (0.08;4.82)	0.41 (0.04;3.82)	0.398
Occupation					
Merchant	16	157	2.18 (0.88;5.46)	2.11 (0.86;5.36)	0.113
Private employee	7	65	2.31 (1.78;6.85)	2.11 (0.68;6.35)	0.216
Gov't employee	19	40	10.18 (3.99;25.91)	2.18 (0.99;12.91)	0.123
Student	21	107	4.21 (1.73;10.25)	2.01 (0.73;9.25)	0.103
Farmer	9	211	0.91 (0.33;2.51)	0.81 (0.33;2.21)	0.331
Housewives	7	150	1	1	
Educational level					
No formal education	9	211	1	1	
Primary	14	222	1.48 (0.63;3.49)	1.18 (0.61;3.19)	0.107
Secondary	31	196	3.71 (1.72;7.99)	2.91 (1.52;6.99)	0.031
College and above	25	101	5.80 (2.61;12.89)	3.69 (2.41;10.69)	0.024
Monthly income					
<1000	9	76	1	1	
1000-2000	20	301	0.56 (0.25;1.28)	0.36 (0.21;1.08)	0.121
2000-3000	14	150	0.79 (0.33;1.90)	0.59 (0.23;1.90)	0.431
3000-4000	12	111	2.10 (1.07;2.27)	1.91 (0.07;2.79)	0.089
≥ 4000	24	92	2.60 (1.17;5.42)	2.20 (1.17;5.42)	0.035
Knowledge about blood donation					
yes	48	292	2.32(1.44;3.73)	2.12 (1.41;3.53)	0.002
No	31	437	1	1	
Attitude					
Good	46	294	2.07 (1.29;3.31)	1.97 (1.29l3.11)	0.001
Not good	33	436	1	1	

Strength and Limitation of the Study

The study design was supported by a qualitative approach, which makes for a stronger approach to assess the practice and factors associated with blood donation practice and complements the study with a qualitative data collection method. In addition, we used a larger sample size, which made the findings of the study more accurate. The study's cross-sectional design prevented it from determining the cause-and-effect link. In addition, the possibility of recall bias could not be ruled out, and to study determinant factors, a cross-sectional design study has limitations.

Conclusion and Recommendation

In this study, blood donation practice was low as compared with the World Health Organization recommendation. The education level of the study participant, monthly income, knowledge about blood donation, and attitude toward blood donation were significantly associated with blood donation. As a result, it is critical to raise awareness and attitudes toward blood donation. Local governments and other concerned bodies should work together to increase societal income. Health authorities should collaborate with rural communities to organize blood donation campaigns to provide opportunities for altruistic blood donation.

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