

Blood donation intentions and predictors among Hosanna town dwellers, south nation nationality peoples region, Ethiopia

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ABSTRACT

Introduction: Blood is a vital concern to society. It contributes to saving millions of lives each year in both regular and emergency situations. Globally, there is a continual need to maintain a safe and sufficient supply of blood and blood yields. Patients who are in need of blood transfusion as part of their medical management have the right to wait for safe and sufficient blood. However, globally, many patients still suffer unnecessarily and die because of a deficiency in safe blood transfusion. **Objective:** The aim of this study was to assess the intention and factors influencing the donation of blood voluntarily among hosanna town dwellers. **Methods:** Community-based cross-sectional study was conducted among 677 adult dwellers of age 18–60 years old that were selected by multi-stage sampling in hosanna town Hadiya Zone, SNNPR Ethiopia, December 2016. **Result:** In this study, 204 (30.1%) of the total participants had ever donated blood. But only 236 (34.9) had the intention to donate blood in the future, which is much less. Age, income, educational status, attitude, and knowledge of participants showed statistically significant association with blood donation intention. As a unit increase by a comprehensive knowledge of the participants, blood donation intention increases by 1.46 (AOR = 1.46, 95% CI: (1.24–1.72)) and people with a favorable attitude towards blood donation had 6.36 times (AOR = 6.36, 95% CI: (3.30–17.24)) more likely intended to donate blood than those who had unfavorable attitude. People who had no formal education have intended 84% less likely when compared with those who had completed primary school only (AOR = 0.16, 95% CI: (0.04–0.64)). Similarly, people who were in the first, least, tertiary income category had blood donation intention 82% (AOR = 0.18, 95% CI: (0.06–0.58)) less likely when compared with people in the highest group. **Conclusion and Recommendation:** As only 30.1% and 34.9 had ever donated blood and intended to donate blood, respectively, which is very low. Lack of awareness and periodic sensitizations were major reasons. Thus, it would be better if the Hadiya zone health department, hosanna town health office, and blood bank hosanna branch take the initiative to increase awareness on voluntary blood donation in the community through different strategies and periodic sensitizations.

Keywords: Blood donation, Ethiopia, Hosanna, intention

Introduction

Blood donation is an important concern to society. It contributes to saving millions of lives each year in both routine and

emergency situations, permits increasingly complex medical and surgical interventions, and dramatically improves the life expectancy and quality of life of patients with a variety of acute and chronic conditions.^[1]

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The Ethiopian Red Cross Society has been the first organization to develop blood banking services in the country. The service has since expanded into a network covering some major hospitals in the country. However, the Ethiopian Red Cross Blood Bank can only meet a fraction of the country's blood demand.^[2]

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Generally, there are three types of blood donors: voluntary unpaid, family/replacement, and paid. Voluntary unpaid blood donors are vital for ensuring a sufficient and stable blood supply.^[3] Voluntary non-remunerated blood donors give blood of their own free will and receive no money or other payment that could be considered a substitute for money. Their primary motivation is to help unknown recipients and not to obtain any personal benefit.^[3,4] The safest donors are found among people who donate their blood voluntarily and are self-aware of their unsuitability to serve as blood donors.^[4-11]

Patients who require transfusion as part of their clinical management have the right to expect that safe and sufficient blood will be available to meet their needs and to receive it.^[5] More than 50% of the blood supply is still dependent on family/replacement and paid blood donors. There is also a marked difference in the level of access to safe blood collection among low, middle, and high-income countries. In low-income countries, the average annual blood collection per blood center is only 3,700 units, whereas in high-income countries, it is 30,000 units, and blood donation rate ranges from 0.4–8.2 per 1000 population in low-income countries when compared to 1.65–36.2 per 1000 population in middle-income countries.^[3,4,6-13] About quarter-million maternal deaths in the world and 15% of child mortality in Africa were due to obstetric bleeding and anemia, respectively, in which blood transfusion is always required. However, annually, 81 million units of blood are collected all over the world; only 27 million are collected in low and middle-income countries, where 82% of the world's population lives.^[6,8]

Countries in Sub-Saharan Africa need to find ways of sustaining sufficient blood supply from voluntary unpaid donors and improving blood safety from the available replacement donors. Due to low cost and cultural compatibility with African culture, replacement donors are the main source for blood donation in Sub-Saharan Africa.

The practice of voluntary blood donation is not common in Sub-Saharan Africa, unlike most of the developed countries. Only a few donors voluntarily donate blood, which is not enough to maintain the demand.

In Sub-Saharan Africa, numerous factors influence donor motivation and perceptions like myths and misconceptions in addition to cultural differences and lack of information, which also affect the principle of human behavior. The study conducted in Western and Eastern francophone African regions of all the seven countries showed female donors are less than 30%.^[9] Supporting reports from Anglophone, East, and Southern African countries have also shown a male dominance in blood donation action over females.^[10] The reason for this male gender predisposition for blood donation is based on the wrong belief that men are healthier than women, agreed with the general belief that women make monthly blood donations to nature, that is through their menstrual cycle thinking of

this as normal blood/clean blood. The other unproven bad cultural myths and misconceptions of African people, especially the majority of Nigerians, is that blood donation may cause decreased libido (in men) and affect the reproductive cycle (in women).^[11-17]

People in Some studies from Burkina Faso, Cameroon, Nigerian, and Ghanaian believe that the donated blood may be used for witchcraft/ritual purpose, and the donor may acquire different health problems such as excessive weight loss, high blood pressure, infectious disease like HIV/AIDS, fever, fainting, or even sudden death.^[15-20]

On the other hand, people may donate blood voluntarily considering the rewards or incentives such as having free health screening or a medical check-up; positive health benefits; creating an opportunity to know one's blood type; receiving gifts such as certificates or T-shirts for formal acknowledgment from the agency organizing the blood donation ceremony. Pro-social motivation such as altruism and collectivism or the desire to help others, especially strangers, without expectation of any reward due to the respect towards the stranger is good cultural extremes among African people.^[6-9]

Ethiopia is the second-most populous country in Africa, with an estimated population of more than 110 million and high motor accidents (among ten top countries in the world) and with a large non-immune population for malaria and most medical care depends on a permanent supply, as one in seven people entering the hospital need blood. For example, cancer patients are dramatically increasing and consistently depend on blood donations. Blood donation is least understood, accepted, and practiced only by a small portion of the population in our country, Ethiopia.^[17]

Blood donation is very critical in the health care system since blood cannot be created in a laboratory, and there are no substitutes.

So, primary care where the entry point to deliver care for patients within the healthcare system and to provide and to assure the quality of care it demands an adequate amount of blood to meet the urgent need of patients facing trauma and other lifesaving procedures, such as blood transfusions which save millions of lives each year.

It is clear that blood collected from voluntary non-remunerated donors is much safer than blood collected from paid or replacement donors, and in most developing countries, including Ethiopia, people still die due to an inadequate supply of blood and blood products. However, the intention of the adult population towards blood donation is poorly assessed in Ethiopia.

It is, therefore, serious to assess blood donation intention and the factors that determine blood donation intention to secure for sustainable use. Thus findings from this study will help

to increase awareness of health professionals and all other concerned governmental and non-governmental organizations about the possible reasons for not donating blood. It is also useful for planning, motivating people, and a good source of information for further research so that mortality due to lack of blood transfusion will go down. The aim of this study was to assess the intentions and factors influencing blood donation intention among the eligible population of Hosanna town, Hadiya zone SNNPR Ethiopia.

Methods and Participants

Study area and period

This study was conducted in December, 2016 among the adult population aged 18–60 years in hosanna town, south nation nationality and peoples region, Ethiopia, which has only one blood bank and one referral hospital.

Study design and population

A community-based cross-sectional study design was employed. Participants were selected using the multi-stage sampling technique. From a total of eight kebeles in the town, four were selected by lottery method. Based on the available number of houses in each selected kebele, the total sample size was shared using a proportion to size allocation of eligible participants, age 18–60 years in the household; one was selected randomly.

Sample size determination

The sample size for this study was determined using single population proportion formula:

$$n = \frac{Z\left(\frac{\alpha}{2}\right)^2 * P(1-p)}{d^2}$$

With the following assumptions:

Where:-

n = required sample size

$Z_{\alpha/2}$ = critical value for normal distribution at 95% confidence interval

Which is equal to 1.96 (Z value at $\alpha = 0.05$).

P = proportion of blood donation intention (37%),

d = Margin of error = 5%.

With the assumptions of 95% Confidence interval, 5% desired precision, and proportion of overall intention to donate blood was 37%, from the previous study, the formula yields $n = 358$. Due to multi-stage sampling, it was multiplied by a factor of 2 to correct the design effect. So, the final sample sizes become 716.

Sampling technique and procedures

Participants were selected by lottery method from selected households of the selected kebeles in the town after a proportion to size allocation of the sample for each kebele. When the person of the specified age was not found in the household, the next nearest household was included in the survey. From a total of eight kebeles in the town, four were selected by lottery method. Based on the available number of houses in each selected kebele, the total sample size was shared using proportion to size allocation. An eligible individual aged 18–60 years in the household was randomly selected.

Data Collection tools and measurement

The questionnaire consists of variables on demographic and socioeconomic characteristics, knowledge on blood donation attitude, and intention of blood donation in the upcoming six months period using a pre-tested interviewer-administered questionnaire.

Data quality assurance

The data quality was assured by proper designing of structured questionnaires, translating into the local language, Amharic, performing pretest, providing training before data collection, and supervision during data collection. Finally, data was entered into EPI data version 3.1 to clean data and control entry errors.

Data processing and analysis

SPSS version 22 was used for analysis. Bivariate and multivariable logistic regression analysis was applied to identify the association. All significant variables at a P value of less than 0.25 in bivariate analysis were taken as a candidate for multivariable logistic regression. Variables having P value less than 0.05 at 95% confidence interval in multivariable logistic regression were considered as having significant association with the dependent variable.

Ethical consideration

Ethical clearance was taken from the Ethical Review Committee of Wachemo University. Verbal consent was obtained from respondents prior to the interview.

Result

Socio-demographic characteristics of the respondents

Seven hundred two out of seven hundred sixteen samples participated in the study, giving a 98% response rate. The mean age of the respondents was 40.3 years with ± 17.34 SD. The majority were private workers 387 (55.1%) and protestant religion followers 581 (82.7%). Higher proportions 431 (61.4) attended grade 9 and above and Hadiya by their ethnic base 447 (63.7) [Table 1].

Source of information, Knowledge, and attitude towards blood donation

In this study, majority 677 (96.4%), of the participants had heard about blood donation and the main source of information

618 (91.3%), was mass media. About half knew that blood donation saves lives 345 (51%) but only 86 (12.7%) knew about the required age range for blood donation, which is 18–60 years [Table 2].

Blood donation practice and intention to donate blood in the coming six months

Out of those who had ever heard about blood donation, 204 (30.1%) donated their blood even if half of them 103 (50.4%) were for replacement/family/reason [Table 3].

Factors associated with blood donation intention

Multivariable logistic regression analysis revealed that donor’s age, educational status, income, marital status, attitude, and comprehensive knowledge of participants showed statistically significant association with the outcome variable, blood donation intention.

Age had a negative association with blood donation intention, showing that people aged 18–28 years had 4.89 times (AOR = 4.89, 95% CI: (1.42–16.91)) more likely intended to

donate blood than those in 29–38 years age group. People who had no formal education had intended 84% less likely when compared with those who had completed primary school only (AOR = 0.16, 95% CI: (0.04–0.64)). Similarly, people who were in the first, least, tertiary income category had blood donation intention 82% (AOR = 0.18, 95% CI: (0.06–0.58)) less likely when compared with peoples in the highest income group. The marital status of the participants had a strong association with blood donation intention. People who did not get married had 8.36 times (AOR = 8.36, 95% CI: (3.30–21.24)) more likely intended to donate blood when compared with those who got married. In a similar manner, people with high comprehensive knowledge about blood donation and a favorable attitude towards blood donation had a strong positive association with blood donation intention. As a unit increase by the knowledge of the participants, blood donation intention increases by

Table 1: Socio-demographic and economic characteristics of study participants on blood donation intention and factors among participants in hosanna town Hadiya zone, SNNPRS Ethiopia, December 2016 (n=702)

Socio-demographic Variable	Frequency %	Number	Percentage
Age	18-28	103	14.7
	29-38	234	33.3
	39-48	169	24
	49-60	196	28
Sex of respondent	Female	365	52
	Male	337	48
Education status of respondents	No formal education	119	17
	Grade 1 to 8	152	21.6
	Grade 9 and above	431	61.4
Religion of respondent	Protestant	581	82.7
	Orthodox	87	12.4
	Muslim	25	3.6
	Others	9	1.3
Income	Least tertiary, <470	182	26
	Middle tertiary 470-1000	167	23.7
	Highest tertiary >1000	353	50.3
Occupation	Governmental	98	14
	Private	387	55.1
	Student	202	28.8
	Other	15	2.1
Marital status	Married	405	57.7
	Unmarried	297	42.3
Ethnicity	Hadiya	447	63.7
	Kembata	91	13.0
	Gurage	62	8.8
	Amhara	53	7.5
	Silte	47	6.7
	Others	2	0.3

Table 2: Source of information, knowledge, and attitude towards blood donation among study participants in hosanna town Hadiya zone, SNNPRS Ethiopia, December 2016

Characteristics	Category	Frequency	%
Heard about blood donation	Yes	677	96.4
	No	25	3.6
Source of information			
**n=702			
	Mass media	618	91.3
	Health institution	427	63
	Red cross	162	23.9
	Family	89	13.1
	Pamphlets	81	11.9
	Friends	32	4.5
	Others	22	3.3
Knowledge about blood donation ** (n=677)	Know that blood donation saves life	345	51
	Know that blood donation is a humanitarian activity	226	33.4
	Know that blood could be collected and stored at a blood bank	133	19.6
	Know that screening for HIV/AIDS is not mandatory	125	18.5
	Know that the time interval for blood donation is 3 to 4 months	91	13.4
	Know about the required age range for blood donation is 18-60 years	86	12.7
Knowledge on blood donation (mean score as cut of point)	Good	299	44.2
	Poor	378	55.8
Attitude (mean score as cut of point) n=677	Favorable attitude:	179	26.4
	Un favorable	498	73.6

** More than one responses were mentioned

Table 3: Blood donation intention, practice and reasons for blood donation among study participants in hosanna town Hadiya zone, SNNPRS Ethiopia, December 2016

Characteristics	Category	Number	Percent
Have you ever donated blood (n=677)	Yes	204	30.1
	No	473	69.9
Reason for blood donation (n=204)	Replacement/family/	103	50.4
	Paid	61	30.1
	Voluntarily/as humanitarian act/	40	19.5
Reason for not to donate blood (n=473)	Lack of awareness	237	50.0
	Lack of periodic sensitizations	198	41.9
Are you willing to donate blood within the coming six months (Blood donation intention)	yes	236	34.9
	no	441	65.1

1.46 (AOR = 1.46, 95% CI: (1.24–1.72)) and people with favorable attitude towards blood donation had 6.36 times (AOR = 6.36, 95%CI: (3.30–17.24)) more likely intended to donate blood than those who had unfavorable attitude [Table 4].

Discussion

Though blood donation is a vital concern to society, in this study, only 204 (30.1%) of the participants had ever donated blood, which is a bit higher than the study conducted in Botswana, where 27.1% had ever donated blood. But only 236 (34.9) were willing to donate blood in the near future, in the coming six months, which is much less than a similar study conducted in Botswana, where it is 70.1%.^[21] The difference could come from the current higher attention towards blood donation so that good social marketing towards blood donation and periodic sensitization in Botswana than in our study setting. Knowledge was a strong predictor of blood donation intention. Participants having good comprehensive knowledge on blood donation increase donation intention by 1.46, and participants with a favorable attitude towards blood donation increase blood donation intention by 6.36. This is in line with the prior study conducted in Perlis, Malaysia, where attitude and knowledge had a strong positive association with blood donation intention.^[22] This could be because knowing about the benefit of blood donation might alarm them, better understand and develop a positive attitude towards blood donation and reduce any barriers to donating blood.

The level of education becomes a known statistically significant predictor of intentions to donate blood. When we compare those who intended to donate blood with those no intention, respondents who had no formal education had intended

84% less likely than those who had completed primary school (AOR = 0.16, 95% CI: (0.04–0.64)) to donate blood in the next six months. This is consistent with the study in African Americans College students and study conducted in Mekele town, Ethiopia.^[21,23] This might be due to high exposure to information sources, so they might have high awareness, and such educated people may resist accepting any negative social and cultural influences towards blood donation. Age had a negative association with blood donation intention, showing that people in the age group of 18–28 years had 4.89 times (AOR = 4.89, 95% CI: (1.42–16.91)) more likely intended to donate blood than those in 29–38 years age group. This is different when compared with the study conducted in African American College students, where, as the age of the participants increased, they were more likely intended to donate blood.^[21] This might be due to the fact that people at a younger age might have more information, responsibility, and they know more about blood donation importance than elders in our country.

Income was also the concern of the respondents in this study. Participants in the least tertiary were 82% (AOR = 0.18, 95% CI: (0.06–0.58)) less likely intended to donate their blood than those in the highest tertiary class. Conversely, a study conducted in the Philippines showed that blood donation intention had no association with income.^[24] This difference might be due to respondents in our study perceiving that they may easily replace their blood since the income is high to secure their food.

Conclusion and Recommendation

As only 30.1% and 34.9% of the participants had ever donated blood and intended to donate blood, respectively, it is very low. Age, educational status, income, marital status, attitude, and comprehensive knowledge were significant variables. Lower comprehensive knowledge and periodic sensitizations were major reasons. Hence it would be better if the Hadiya zone health department, hosanna town health office, and blood bank hosanna branch take the initiative to increase awareness on voluntary blood donation in the community through different strategies and periodic sensitizations by giving more emphasis to those in lower educational level and for those in the lower-income category.

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Declaration of patient consent

Ethical clearance was taken from Ethical Review committee of Wachemo University. Verbal consent was obtained from respondents prior to the interview.

Financial support and sponsorship

Nil.

Table 4: Final logistic regression model with variables associated with Blood donation intention among peoples age 18–60 years in Hosanna town Hadiya Zone, Southern Ethiopia, December 2016

Characteristics	HAS BLOOD DONATION INTENTION		COR (95% CI)	AOR (95% CI)
	Yes-no (%)	No-no (%)		
Age				
18-28	86 (36.4)	15 (3.5)	5.23 (2.27-12.05)*	4.89 (1.42-16.91)**
29-38	119 (50.4)	113 (25.7)	1.00	1.00
39-48	23 (9.9)	182 (41.2)	0.12 (0.06-0.25)*	0.13 (0.04-0.43)**
49-60	8 (3.3)	131 (29.6)	0.06 (0.02-0.17)*	0.09 (0.02-0.49)**
Educational status				
No formal education	17 (7.4)	174 (39.4)	0.19 (0.09-0.41)*	0.16 (0.04-0.64)**
Primary school (1-8)	105 (44.6)	199 (45.1)	1.00	1.00
Secondary and above (≥9)	114 (48)	68 (15.5)	3.13 (1.84-5.34)*	0.90 (0.35-2.33)
Income				
Least tertiary, <470	23 (9.9)	159 (34.1)	0.25 (0.12-0.48)*	0.18 (0.06-0.58)**
Middle tertiary 470-1000	80 (33.9)	87 (18.6)	1.54 (0.91-2.60)	0.74 (0.28-1.98)
Highest tertiary >1000	133 (56.2)	220 (47.3)	1.00	1.00
Occupation				
Governmental	55 (23.1)	43 (9.3)	1.98 (1.05-3.73)*	1.50 (0.40-5.73)
Private	151 (64)	236 (50.7)	1.00	1.00
Student	25 (10.7)	177 (38)	0.23 (0.12-0.43)*	0.82 (0.18-3.79)
Other	5 (2.2)	10 (2)	3.13 (1.84-5.34)*	0.90 (0.35-2.33)
Reason for blood donation (n=204)				
Replacement/family/ Paid	170 (83.5)	156 (69)	1.00	1.00
Voluntarily/as humanitarian act/ (marital status)	25 (12.4)	47 (20.8)	0.49 (0.26-0.93)*	0.38 (0.11-1.29)
Unmarried	9 (4.1)	23 (10.2)	0.34 (0.12-0.91)*	0.51 (0.07-3.70)
Marrried	174 (73.6)	123 (26.5)	7.70 (4.67-12.69)*	8.36 (3.30-21.24)**
Source of information Media				
Yes	62 (26.4)	343 (73.5)	1.00	1.00
No	386 (62.5)	10 (16.3)	3.09 (1.84-5.18)*	1.23 (0.44-3.44)
Know that blood donation saves life				
Yes	232 (37.5)	49 (83.7)	1.00	1.00
No	223 (94.5)	122 (28.3)	3.57 (2.19-5.80)*	5.28 (2.28-12.24)**
Sex n=677				
Male	13 (5.5)	309 (71.7)	1.00	1.00
Female	112 (16.5)	267 (39.4)	0.30 (0.17-0.57)*	0.90 (0.31-2.57)
Knowledge sum				
Attitude towards blood donation (mean score)				
Favorable	229 (97.2)	117 (26.5)	7.70 (4.67-12.69)*	6.36 (3.30-17.24)**
unfavorable	7 (2.8)	324 (73.5)	1.00	1.00

*Significant at P<0.25 **Significant at P<0.05 Reference=1.00

Conflicts of interest

There are no conflicts of interest.

Abbreviations

AOR	Adjusted odd ratio
BB	Blood bank
CI	Confidence interval
COR	Crude odd ratio
EBB	Ethiopian blood bank
ERCS	Ethiopian red cross society
ERCS	NBBS- Ethiopian Red Cross Society National Blood Bank Services
ETB	Ethiopian Birr

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