Blood Disorders & Transfusion

Darega et al., J Blood Disord Transfus 2015, S5:1
http://dx.doi.org/10.4172/2155-9864.1000S5-005

Research Article Open Access

Voluntary Blood Donation Practices and Associated Factors among Regular Undergraduate Madawalabu University Students, Southeast Ethiopia: A Facility-based Cross Sectional Study

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Received date: Jul 10, 2015, **Accepted date:** Sep 18, 2015, **Publication date:** Sep 22, 2015

Abstract

Background: Blood transfusion is a life-saving intervention that is the process of receiving blood products and used in a variety of medical conditions to replace lost components of the blood. It has an essential role in patient management within health care systems. Up to 150 000 pregnancy-related deaths could be avoided worldwide each year through access to safe blood. Of the estimated 80 million units of blood donated annually worldwide, only 38% are collected in the developing world where 82% of the world's population lives. There is no substitute for blood. Only blood donors can maintain an adequate supply of blood to save the lives of those who need it. However, a very large proportion of potentially eligible population were present, they do not actively donate blood.

Objectives: This study was assessed the practice of voluntary blood donation and associated factors among Madawalabu University Students, Southeast Ethiopia.

Methods: Institution-based cross-sectional study design was conducted in May 1-15, 2015 among 634. Ten college/schools/institute were stratified into health and non-health. Six non health schools randomly selected and the Health College taken as it is. Self- administered structured questionnaires were used to collect the data. Data was checked for their completeness, enter in to Epidata version 3.1, and export to SPSS version 21 for analysis. Descriptive analysis was used to determine the prevalence. Bivariate and multivariate analyses were employed to identify associated factors by considering p-value of less than 0.05 as significant. The results were presented in a narrative forms, tables and graphs.

Results: From 634 sampled students, 609 students participated in the study with a response rate of 96.1%. From the total respondents, 18.4% (112) had ever donated blood in their life. Twenty-five (22.3%) of the donors donated the blood two and above times. From those had ever donated blood, 70.5% (79) of them were voluntarily donated.

Conclusions: Though, the university students are in the range of age of huge pool for blood donation, proportion of students have ever donated blood are low. Age, year of study, willingness to donate in the future, had feared to donate blood, willingness to encourage relatives to donate, and attitude toward voluntary blood donation were the predictor variables for voluntary blood donation.

Madawalabu University in collaboration of zonal blood bank should work to increase the knowledge level of university students on voluntary blood donation.

Keywords: Practice of blood donation; Voluntary blood donation; Associated factors

Background

Blood transfusion is a life-saving intervention that is the process of receiving blood products and used in a variety of medical conditions to replace lost components of the blood. It has an essential role in patient management within health care systems. With increase in population and development of more advanced medical and surgical procedures, the need for blood is ever increasing. There is no substitute for blood. Only blood donors can help maintain an adequate supply of blood to save the lives of those who need it. When you donate blood, you give a second chance at life to someone unknown to you. One does not know who will need blood transfusion tomorrow, it could be you or your friend or dear one [1,2].

The criteria's for blood donations are; blood donors must be in good general health, aged 18 to 60 years, weigh at least 45 Kg, hemoglobin level of 12.5 g/dl, pulse rate between 60 to 100 per minute, blood pressure is should be systolic 100 to180 mm Hg and diastolic 50 to100 mm Hg, oral temperature should not be exceeded 37.5°C and not have donated blood in the last 12 weeks [3].

Donating blood helps in stimulating generation of new blood cells. It also a burns calorie that means one can diet or remain fit by donating blood regularly. One pint of blood (450 ml) when donated

burns 650 calories in donor's body. Apart from all these benefits a donor gets a mini blood test done before donating blood [4].

Young people are the hope and future of a safe blood supply in the world. The WHO insists the countries to focus on young people to achieve 100% voluntary unpaid blood donation. Estimated that 38% of reported voluntary blood donations are contributed by people under the age of 25years old [5].

Every country faces an ongoing challenge to collect sufficient blood from safe donors to meet national requirements. 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 countries, chronic blood shortages are common [6].

Ethiopia is a one of the developing countries that had chronic shortage of blood for donation. It had high maternal mortality 676/100,000 [7] and from this 30% were due to hemorrhage that resulted by non-availability of blood for transfusion totally or delay that can be prevented if mother access for blood transfusion services [8].

Materials and Methods

Study area and period

The study was conducted in Madawalabu University in March 2015. Madawalabu University is one of the newly established Public universities in 2007. It found in Bale Zone, Oromiya regional State, at a distance of 430 km away from Addis Ababa to Southeast of Ethiopia. The University has two campuses that main campus in Robe town with 5,599 and Medicine and Health Sciences College campus in Goba town with 669 regular undergraduate students with a total of 6,268 that run under one-college, one-institute and nine schools [9].

Study design and participants

Institution-based quantitative cross-sectional study design was conducted among Regular undergraduate students of Madawalabu University those selected through simple random sampling.

Sample size determination and sampling procedures

The required sample size was determined by using single population proportion formula considering the assumptions of proportion of 50% (Similar published literatures, done in the same or similar place were not available), Confidence interval 95%, Margin of error 5%, and Non-response rate 10%. Finally, considering design effect of 1.5, the final sample size was 634.

The university was stratified into health and non-health school. From the total ten non-health schools and one medicine and health Sciences College of the university, six schools were selected randomly and one college medicine and health Sciences was taken as it is. The total sample size of the study was allocated proportionally for the schools/college. Sample allocated for the schools/college were allocated proportionally for the departments and class year. Finally, by using simple random sampling the study units were addressed.

Data collection tools and methods

The questionnaire was adapted from different literature that was pertinent to the topic [10-14]. Data were collected through self-administered questionnaires by six -diploma nurses. Two master level supervisors were supervised the data collectors.

Data process and analysis

Before data entry, questionnaires were checked for completeness. The data were entered using Epidata 3.1 and exported to SPSS windows version 21 for analysis. Percentage and Frequency were calculated. The findings of the study were presented by using tables and graphs. Bivariate analysis was used primarily to check which variables have association with the dependent variable individually. Furthermore, variables were entered in to multiple logistic regression of forward conditional method with an entry of 0.05 and 0.1 removal for controlling the possible effect of confounders. Finally, the variables that have p-value of <0.05 were considered statistically significant. The degree of association between independent and dependent variables were assessed using adjusted odds ratio with 95% confidence interval.

Data quality control

The questionnaire prepared in English language was translated to the local languages (Afan Oromo and Amharic) and re-translated to English language by different language expertise. Pre-test was done on 5% of the samples at schools not selected as study population with some time gap to decrease information contamination before the actual data collections and amendment were made accordingly. The data collectors and supervisors were trained on data collection tools and procedures for two days. On top of this, supervisors were follow data collectors and the investigators were also check for the collected data clear and completeness.

Ethical consideration

Ethical issues were approved by Madawalabu University Research Ethical Review Committee. Communication was made with schools before data collection. Prior to administering the questionnaires, the objectives of the study were clearly explained to the participants and oral informed consent obtained. Confidentiality and anonymity ensured throughout the execution of the study. Participants were informed that their participations were voluntary that they could withdraw from the study at any time if they wish to do so. All the information given by the respondents was used for research purposes only.

Results

Socio-demographic Characteristics of the respondents

A total of 609 Madawalabu University students participated in the study with a response rate of 96.1%. The mean age of the respondents was 21.3 (standard deviation (SD) ± 1.63). Two third 66.8% (407) of the respondents were male.

Thirty nine percent (236) of the respondents were Orthodox Christian by religion. Fifty-five percent (333) of the respondents were from grade 11, and 62% (373) of the respondents were male. Regarding their year of study 26.8% (163) were year one. More than ninety percent (581) of the respondents were single in their marital status (Table 1).

Variables	Alternatives	Number (N)	Percentage (%)
Sex of respondents	Male	407	66.8
	Female	202	33.2
Age of respondents	18-20 years	210	34.5
	21-23 years	352	57.9
	≥24 years	46	7.6
Religion of respondents	Muslim	144	23.6
	Orthodox	236	38.8
	Protestant	201	33
	Other*	28	4.6
	Single	581	95.4
Marital Status	Married	21	3.4
	Divorced	6	1
	Widowed	1	0.2
Ethnicity	Oromo	484	79.5
	Amhara	66	10.8
	Tigre	8	1.3
	Other**	51	8.4
	Engineering and Technology	317	52.3
School/College	Natural Science	56	9.2
	Health Science	77	12.7
	Biodiversity and Natural Resource Management	22	3.6
	Business and Economics	86	14.2
	Behavioral Science	26	4.3
	Language	22	3.6
Class Year	I	163	26.8
	II	188	30.9
	III	156	25.7
	IV	53	8.7
	V	48	7.9
Original Residence	Urban	270	44.4
	Rural	338	55.6

*Wakefanna, Apostiles, ** Sidama, Wolayita, Hadiya and other ethnic group from SNNP

Table 1: Socio-demographic characteristics of the respondents of Madawalabu University, May, 2015 (N=609).

Voluntary blood donation practice among respondents

From the total respondents 18.4% (112) had ever donated blood in their life. Twenty-four (21.5%) of the donors donated the blood two and above times. From those had ever donated blood, 70.5% (79) of them donated voluntarily (Table 2). Fear for their health status, unfit to donate, never thought about voluntarily blood donation and no one asked them were the reasons for not donating blood among 112, 111,105 and 103 respondents respectively (Figure 1).

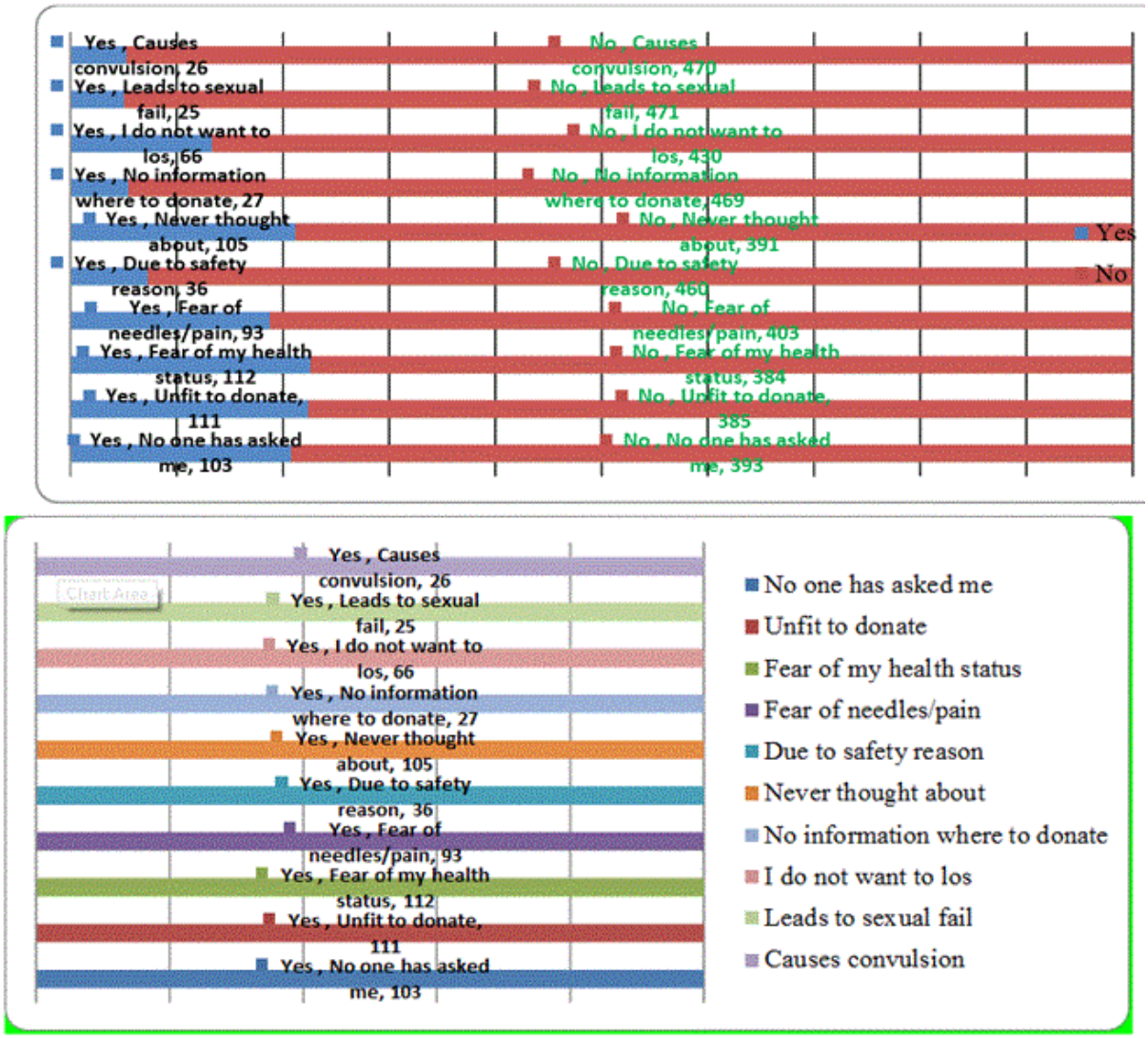

Figure 1: Reason for not donating blood voluntarily among Madawalabu University students who hadn't donated ever, May, 2015.

Variables	Alternatives	Frequency (N)	Percentage (%)
Have ever you donated before?	Yes	112	18.4
	No	496	81.6
How often they have donated	Once	87	77.7
	Two times	19	17
	Three times	3	2.7
	Four and above	2	1.8
When was the last time you donated blood	<=1 year	60	53.6
	>1 year	52	46.4
Why did they donate blood	A friend or relative needed blood	25	22.3

	Voluntary	79	70.5
	Payment /to get money/	1	0.9
	To know my blood sero status	6	5.4
	Other	1	0.9
You have willingness to donate blood if asked or reminded to do so	Yes	389	63.9
	No	167	27.4
	No answer	53	8.7

Table 2: Voluntary blood donation practice among Madawalabu University students, May, 2015 (N=609).

Factors associated with practicing voluntary blood donation among respondents

Binary and multiple logistic regressions were done to analyze factors associated with voluntary blood donation at P-value less than 0.05. Accordingly, age, year of study, having information that a person can donate blood more one at different time, willingness to donate in the future, having fear to donate blood, willingness to encourage relatives to donate, knowledge of voluntary blood donation and attitude toward voluntary blood donation were identified as associated variables using bivariate analysis. Younger age respondents had higher odd to donate blood compared to older one [COR 3.90 (1.57-9.69)]. Respondents those had favorable attitude toward blood donation were also 2.43 time to donate blood voluntarily compared to unfavorable one [COR 2.43 (1.50-3.92)].

However, age, year of study, willingness to donate in the future, having fear to donate blood, willingness to encourage relatives to donate, and attitude toward voluntary blood donation were become the predictor variables for voluntarily blood donation through multivariate logistic regression. Respondents aged 18-20 years and those aged 21-23 years 6 times more likely to donate blood compared to respondents age 24 years and above [AOR 6.14 (1.82-20.69) and AOR 6.49 (2.04-20.64)]. Those individuals, who have willingness to donate blood in the future had more odd to donate blood compared to respondents had no willingness [AOR 5.88 (1.36-25.43)]. Those respondents who had favorable attitude toward voluntary blood donation were 1.77 times more likely to donate blood compared to those individuals who were uncomfortable with voluntary blood donation [AOR 1.77 (1.04-6.57)] (Table 3).

Variables	**Alternatives**	**Voluntary blood donation practice**			**COR [95% CI]**	**AOR [95% CI]**
		Yes	**No**			
Sex	Male	78		329	1.16(0.75-1.82)	-
	Female	34		167	1	-
Age	18-20 years	37		173	3.90(1.57-9.69)*	6.14 (1.82-20.69)*
	21-23 years	58		294	3.99(1.65-9.62)*	6.49 (2.04-20.64)*
	≥24 years	17		29	1	1
Year of study	I	26		136	0.48(0.16-1.44)	0.20 (0.05-0.82)*
	II	37		151	0.37(0.13-1.10)	0.15 (0.04-0.57)*
	III	32		124	0.35(0.12-1.05)	0.16 (0.04-0.62)*
	IV	13		40	0.28(0.08-0.93)*	0.15 (0.04-0.65)*
	V	4		44	1	1
Can a person donate blood more than one	Yes	484		18	1.97(1.04-3.74)*	0. .85 (0.40-1.79)
	No	92		15	1	1
Having willingness to donate blood in the future	Yes	475		15	16.98(4.08-69.03)*	5.88 (1.36-25.43)*
	No	100		18	1	1
I am in full of fear to donate blood	Agree	224		15	1	1
	Neutral	97		5	0.43 (0.23-0.82)*	0.47 (0.24-0.92)*
	Disagree	254		13	0.33(0.20-0.55)*	0.43 (0.25-0.74)*

Do you encourage relatives to donate?	Yes	459		16	3.31(1.68-6.54)*	1.07 (0.49-2.36)
	No	114		17	1	1
Being Willingness to donate if reminded to do so	Yes	378		11	0.44 (0.19-1.00)*	0.71 (0.28-1.74)*
	No	152		15	4.93 (1.50-16.26)*	5.32 (1.53-18.56)*
	No response	46		7	1	1
Knowledge of voluntary blood	Good knowledge	277		1	1.54 (1.02-2.32)*	1.01 (0.62-1.65)
donation	Poor knowledge	299		32	1	1
Attitude toward voluntary blood	Favorable	86		289	2.43 (1.50-3.92)*	1.77 (1.04-6.57)*
donation	Unfavorable	25		204	1	1

Table 3: Association of factors with voluntary blood donation among Madawalabu University, May, 2015. *P-value <0.05.

Discussions

This study was assessed the voluntary blood donation Practice and associated Factors among Madawalabu University Students, Southeast Ethiopia. Accordingly, only 18.4% (112) respondents had ever donated blood in their life. Twenty-five (22.3%) of the donors donated the blood two and above times.

Age, year of study, willingness to donate in the future, having fear to donate blood, willingness to encourage relatives to donate, and attitude toward voluntary blood donation were become the predictor variables for voluntarily blood donation.

In similar to this study, the study done on the practice of voluntary blood donation in Iran revealed that 24.6% respondents were ever donated blood in their life [15]. Again, in similar study done in Nigeria shown that 15.3% respondents were ever donated blood [13]. The similarities between these studies may be due to there is no much awareness regarding blood donation in developing countries.

The other study that done in Addis Ababa University, Ethiopia revealed also similar results that 23.4% of the respondents were ever donated blood [16]. In concurrent to this study, the study done in Ambo University, Ethiopia reflected that 23.6% of respondents had ever donated blood in their life [17].

Their similarities may be due to three of them done on the similar population and almost done in similar years.Age, attitude, Academic year, faculty and knowledge were some of the variables that had association with voluntary blood donation practice [16-18].

Limitations and Strengths of the Study

The random selection of sample took place while addressing of study participants. Therefore, generalization can be possible for similar population. But since this study was facility based, this findings cannot generalized for adolescents that present in the community.

Therefore, in future it is better if further studies will done on general community to decrease information gap present in the community at grass root level regarding knowledge and attitude toward voluntary blood donation.

Conclusions and Recommendations

Even though, the university students are in the range of age of huge pool for blood donation, proportion of students have ever donated blood are low.

Age, year of study, willingness to donate in the future, having fear to donate blood, willingness to encourage relatives to donate, and attitude toward voluntary blood donation were the predictor variables for voluntary blood donation among Madawalabu University students.

Madawalabu University in collaboration of zonal blood bank should work to increase the knowledge level of university students on voluntary blood donation. Focusing the identified predictor variables will be suggestive to have enough blood in the blood bank through voluntary blood donation method.

Competing Interests

None of the authors has any competing interest.

Authors' Contributions

BD and ND conceived and designed the study. TT and BL assisted in the design and data entry. BD and ND analyzed the data and interpreted the results. BD prepared the manuscript. All authors critically reviewed the manuscript and approved it.

Acknowledgments

We would like to acknowledge Madawalabu University for supporting this study financially. In addition, our heartfelt thanks also extended to study participants who shared their priceless time as well as for their full commitment to give information. Again, our special gratitude and appreciation goes to data collectors for their commitment and devotion during data collections. At last but not the least, we would like to thank our families, friends and colleagues for all their supports and encouragements during conduction of this study.

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This article was originally published in a special issue, entitled: **"Blood Diseases and Diagnosis"**, Edited by Suhailur Rehman, JN Medical College AMU, India