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RESEARCH ARTICLE

Factors Associated with Blood Donation Practice among College Students in Southwest Ethiopia

Tewodros Yosef^{1,*} , Wondimagegn Wondimu¹, Ameha Zewudie² and Aragaw Tesfaw³

¹Department of Public Health, College Of Medicine And Health Sciences, Mizan-Tepi University, Mizan-Aman, Ethiopia

²Department of Pharmacy, College Of Medicine And Health Sciences, Mizan-Tepi University, Mizan-Aman, Ethiopia

³Department of Public Health, College of Health Science, Debre Tabor University, Debre Tabor, Ethiopia

Abstract:

Background:

Blood transfusion is a crucial element of health care. It contributes to saving millions of lives both in routine and emergencies each year. However, millions of patients do not have timely access to this vital resource in Low-income Countries (LICs), including Ethiopia. Eventhough some shreds of evidence are available at the national level, specific studies regarding blood donation practice among college students are limited. Therefore, this study aimed to assess the magnitude and factors associated with blood donation practice among college students in southwest Ethiopia.

Methods:

A cross-sectional study was conducted among 429 Mizan-Aman health science college students from June 01 to 15, 2019. The data were collected using a self-administered questionnaire. The data were entered and cleaned using EPI-Data version 4.2.0.0, then analyzed using SPSS version 20 software.

Results:

Of the 394 participants, the practice of blood donation was 35.5% (140), 95% CI (30.8%-40.2%). Of the 140 participants, 72 (51.4%) and 120 (85.7%) of the respondents were one-time donors and voluntary blood donors, respectively. The factors associated with the practice blood donation were aged ≥ 23 years, former urban residence, having a mother with primary school completed, having good knowledge, and a positive attitude toward blood donation.

Conclusion:

The practice of blood donation was not adequate among study populations. Therefore, the consideration of encouragement campaigns and educational sessions within the campus will play paramount importance in the increment of blood donation practice.

Keywords: Blood donation, Practice, Factors, Mizan-aman, Health science college, Ethiopia.

Article History

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1. INTRODUCTION

Blood transfusion is a crucial element of health care. It contributes to saving millions of lives both in routine and emergencies each year and radically improves the life expectancy and quality of life of patients with a multiplicity of diseases and injuries [1 - 3]. However, millions of patients do not have timely access to this vital resource in low-income countries, including Ethiopia [4].

The World Health Organization (WHO) estimates that blood donation by 1% of the population is generally the minimum needed to meet a nation's most basic requirements for blood. Surprisingly, thirty-eight countries in Africa got below ten donations per one thousand people. The scarcity of blood is one of the explanations for the death of mothers in sub-Saharan Africa, including Ethiopia [2]. Sub-Saharan Africa requires blood and blood products that exceed current availability [4]. The high maternal and child mortality rates attributed to pregnancy-related complications, severe malaria, and anemia are evidence of the magnitude of the unmet need for blood transfusion in Africa [5]. Ethiopia is categorized as

* Address correspondence to this author at the Department of Public Health, College Of Medicine And Health Sciences, Mizan-Tepi University, Mizan-Aman, Ethiopia;
Tel: +251-920-478-370; E-mail: tewodrosyosef47@mtu.edu.et

one of the countries with a very low blood donation rate, which is 0.6 per thousand people, next to Nigeria [6].

Blood can only be gained from generous donors [7]. Various studies were conducted elsewhere and showed the magnitude of the practice of blood donation from, 33.2% and 18.4% in Gondar [8,9], 12.5% in Gondar [10], 21.6% in Woliya [7], 22.6% in Harar town [11], 23.6% in Ambo [12], and 47.8% in Tigray [13] studies in Ethiopia, 27.1% in Kumasi, Ghana [14], 30.1% in Jeddah [15], 61.2% in Riyadh city [16], and 45.8% in King Abdulaziz Medical City [17] studies in Saudi Arabia, 24.6% in Kerman city, Iran [3], and 26.7% in the sub-Himalayan state, India [18]. The factors associated with practice blood donation are diverse and might include age, gender, religion, knowledge level, attitude level, current academic level, self-perceived health status, and family education [3, 7, 9 - 12, 15, 16, 19].

Despite an increment seen regarding the total number of units of blood collected and the proportion of voluntary blood donation for the last decade, to achieve the WHO regional target of 80% voluntary blood donation [20]. The percentage of blood collected from voluntary blood donors and the average annual blood collection rate is extremely low in Ethiopia [9]. Even though some shreds of evidence are available at the national level, specific studies regarding blood donation practice among college students are limited. Health science college students are not only promising future blood donors but also the motivators and role models for the community in mobilization for blood donation. Therefore, we aimed to assess the magnitude and factors associated with blood donation practice among college students, since they has paramount importance in designing an effective strategy for sustaining adequate and safe blood donation both at the health care and community levels.

2. MATERIALS AND METHODS

2.1. Study Design Setting, and Period

A cross-sectional study was conducted at the Mizan-Aman Health Science College (MAHSC) students from June 01 to 15, 2019. Mizan-Aman Health Science College is situated at the Mizan-Aman town at 585 km southwest of Addis Ababa, the capital city of Ethiopia. There are seven departments in the college of health science. These are clinical nurses, laboratory technicians, health information technology, and health extension workers, midwifery, pharmacy, and emergency treatment.

2.2. Populations

All regular health science college students who studied during the study period were the source population. Randomly selected students who studied during the study period were the study population.

2.3. Sample Size Determination and Sampling Method

The sample size was determined using a single population proportion formula with the input of estimated proportion of practice blood donation (21.6%) (7), 5% margin of error, 95%

confidence interval, and 10% for non-response compensation and a design effect of 1.5. The computed sample size was 429. A two stage stratified random sampling method was used. First, the students were stratified based on year level (I-III) and given a proportional sample size allocation for each academic level. Then, each year level was stratified into departments and the proportional sample size was allocated for each. Finally, a simple random sampling technique was used to select potential study participants using the recorded list of students in each department as a sampling frame from each second level strata.

2.4. Data Collection Instrument and Procedures

The data were collected using a structured self-administered questionnaire. The questionnaire was developed by reviewing relevant literature in English and then translated into the local language, and translated back into English to check the consistency by an independent translator. The training was given to data collectors and supervisors concerning the objective and process of data collection for two days and to discuss the presence of an ambiguous question in the questionnaire. A pre-test was conducted with 5% of the study participants in Mizan-Aman polytechnic college students before data collection. After a minimal modification of the questionnaire, the data collectors distributed the questionnaires to students and they followed them while filling the questionnaires. The supervisors follow and monitor the overall data collection process to maintain the quality of the data.

2.5. Study Variables

The outcome variable was the practice of blood donation. Independent variables were age, sex, former place of residence, parent education, academic year, knowledge, and attitude toward blood donation.

2.6. Operational Definitions

- **Practice of blood donation:** was considered if the respondents had ever donated blood at least once in a lifetime before the study [21].
- **Current donors:** If the time of donating blood was less than 1 year [21].
- **Elapsed donors:** if the time of donating blood was 1–2 years [21].
- **Voluntary blood donors:** are those who give blood for free will and receive no payment, either in the form of cash or in-kind, which could be considered a substitute for money [1].
- **Replacement donors:** are those who give blood when it is required by a member of their own family or community [1].
- **Paid or commercial donors:** give blood in return for payment or other benefits that satisfy a basic need or can be sold, converted into cash, or transferred to another person [1].
- **Knowledge:** Respondents who scored the mean value and above for knowledge-related questions were considered as good knowledge and otherwise considered as poor knowledge [19].

- **Attitude:** Respondents who scored the mean value and above for attitude-related questions were considered as a positive attitude and otherwise considered negative attitudes [19].

2.7. Data Processing and Analysis

The collected data were entered into EPI-Data version 4.2.0.0 and then analyzed using SPSS version 20 statistical software. A binary logistic regression analysis was used to look for the association between outcome and independent variables. Independent variables in the bivariate logistic regression model with a p-value < 0.25 were included in the multivariable logistic regression. Multi-collinearity between independent variables in the model was checked, and the variance inflation factor was found to be acceptable. The Hosmer-Lemeshow goodness-of-fit test indicated (P = 0.286) that the multivariable logistic regression model was good enough to fit the data well. The final results are presented in figures and tables.

3. RESULTS

3.1. Socio-demographic Characteristics

Of the 429, 394 students filled the questionnaire, yielding a response rate of 91.8%. The mean age of the respondents was 22.5 (±3.3 SD) years range from 18 to 35 years. Two hundred nine (53%) of the respondents were female. One hundred sixty-seven (42.3%) and 137 (34.8%) of the respondents were Protestant religious followers and sheka ethnicity, respectively. Two hundred eight (52.8%) of the respondents were urban residence (Table 1).

3.2. Practice Blood Donation

Of the 394 respondents, the practice of blood donation was 35.5% (140). Of the 140 donors, 72 (51.4%) and 97 (69.3%) of the respondents were one-time donors and current donors, respectively. Regarding the place of the last donation, 64 (45.7%) of the respondents donated blood at the health institution. One hundred twenty (85.7%) of the respondents were voluntary blood donors (Table 2).

Table 1. Sociodemographic characteristics of the respondents at the MAHSC in the southwest Ethiopia.

Variables	Categories	Frequency	Percent
Age	< 23 years	176	44.7
	≥ 23 years	218	55.3
Sex	Male	185	47
	Female	209	53
Religion	Protestant	167	42.3
	Orthodox	120	30.5
	Muslim	107	27.2
Respondent’s mother’s education	No formal education	95	24.1
	Primary school	126	32
	Secondary and above	173	43.9
Residency	Urban	208	52.8
	Rural	186	47.2
Year of study	Year I	121	30.7
	Year II	137	34.8
	Year III	136	34.5

Table 2. Blood donation profiles among all the donors at MAHSC in southwest Ethiopia.

Variables	Categories	Frequency	Percent
Ever donated blood (n=394)	Yes	140	35.5
	No	254	64.5
Number of times blood has been donated (n=140)	Once	72	51.4
	Twice	49	35.0
	Three or more	19	13.6
Last time you have donated blood (n=140)	Current donors	97	69.3
	Elapsed donors	43	30.7
The place of your last donation (n=140)	Health institution	64	45.7
	Blood bank	58	41.4
	Blood bank campaigns	18	12.9

(Table 2) contd.....

Variables	Categories	Frequency	Percent
Type of blood donation (n=140)	Voluntary	120	85.7
	Replacement	13	9.3
	Paid	7	5.0

3.3. Reason for Donating/Not Donating Blood

Nearly two-thirds (65.7%) of the respondents donated

blood for the sake of saving lives (Fig. 1). More than one-fourth (26.4%) of the respondents mentioned the fear of needles as the main reason for not donating blood (Fig. 2).

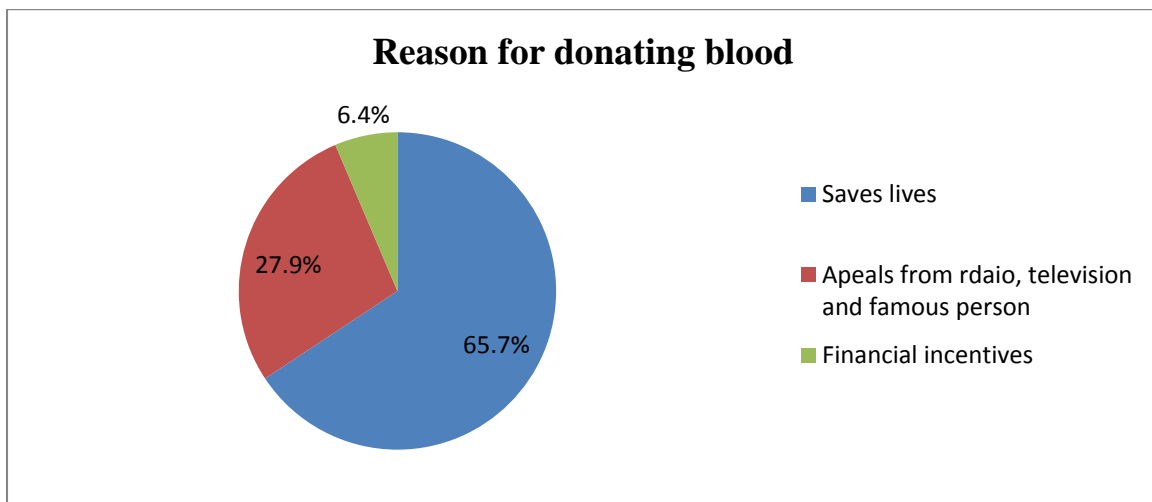


Fig. (1). Reasons for donating blood among respondents at MAHSC in the southwest of Ethiopia.

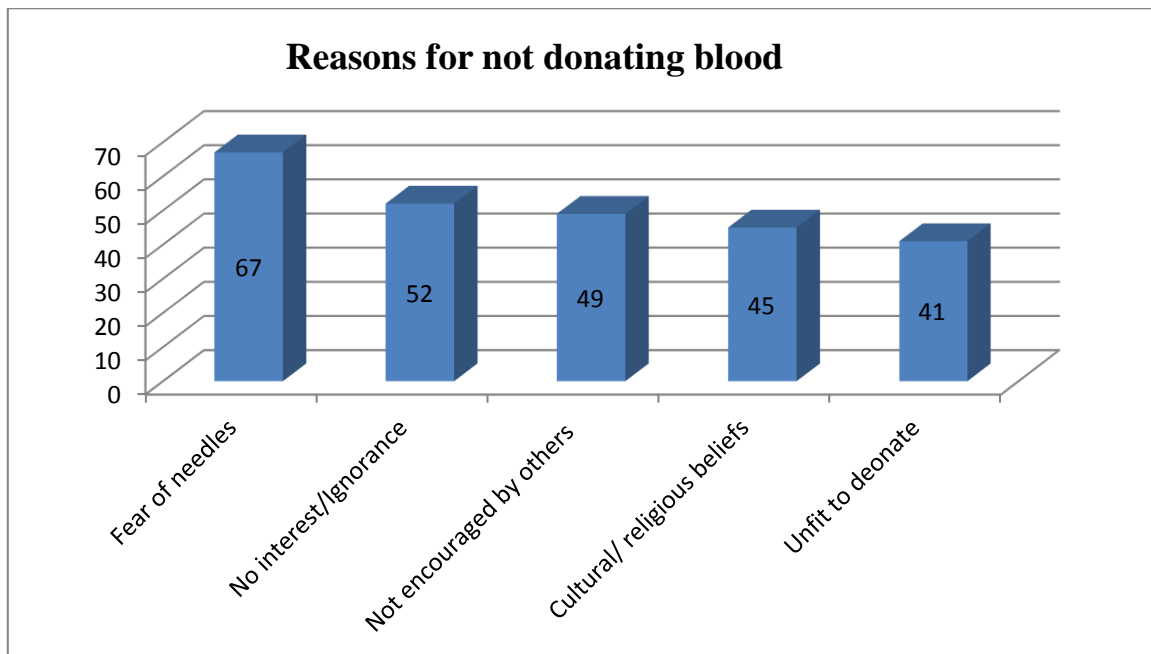


Fig. (2). Reasons for not donating blood among respondents at MAHSC in the southwest of Ethiopia.

Table 3. Factors associated with practice blood donation among respondents at MAHSC in southwest Ethiopia.

Variables	Categories	Practice blood donation		COR (95% CI)	AOR (95% CI)	P-value
		Yes	No			
Age group	< 23 years	47	129	1	1	-
	≥ 23 years	93	125	2.04(1.33-3.13)**	1.97(1.22-3.16)	0.005
Former residency	Urban	92	116	2.28(1.49-3.50)**	2.47(1.54-3.97)	< 0.001
	Rural	48	138	1	1	-
Respondent's mother's education	No formal education	41	97	1	1	-
	Primary school	52	52	2.37(1.39-4.02)**	2.37(1.32-4.26)	0.004
	Secondary & above	47	105	1.06(0.64-1.75)*	0.75(0.42-1.31)	0.307
Year of study	Year I	39	82	1	1	-
	Year II	48	89	0.78(0.48-1.27)*	1.03(0.58-1.84)	0.919
	Year III	53	83	1.48(0.90-2.44)*	1.52(0.85-2.72)	0.154
Knowledge	Poor	24	97	1	1	-
	Good	116	157	2.99(1.80-4.96)**	3.04(1.77-5.24)	< 0.001
Attitude	Negative	50	60	1	1	-
	Positive	90	194	3.03(1.95-4.73)**	1.68(1.03-2.74)	0.039

CI = Confidence Interval, COR = Crude odds ratio, AOR = Adjusted odds ratio, * = significant at p-value < 0.25, ** = significant at p-value < 0.05

3.4. Factors Associated with Practice of Blood Donation

The association of each independent variable with the practice of blood donation was tested using binary logistic regression analysis. In the bivariate analysis, age group, residence, mother's education, year of study, knowledge, and attitude toward blood donation were statistically associated with a practice blood donation at P-value < 0.25. The factors associated with practicing blood donation were aged ≥23 years, former place of urban residence, having a mother with primary school completed, having good knowledge and a positive attitude toward blood donation at a p-value < 0.05 in the multivariable logistic regression model (Table 3).

4. DISCUSSION

Several shreds of evidence have shown that blood donation is an essential component of routine health care practice throughout the world [5, 19, 22]. Since millions of lives can be saved by voluntary donors, particularly in developing countries like Ethiopia, in which a large proportion of maternal death is recorded, it is a very important practice to save the life of mothers [19, 23]. Based on the above scenario, we aimed to assess the magnitude and factors associated with blood donation practice among college students in southwest Ethiopia. As a result, the practice of blood donation was 35.5%, 95% CI (30.8%-40.2%). This was in line with 35.9% in Saudi Arabia [24]. However, it was higher than 21.6% (7), 27.1% in Ghana [14], 29.7% in Malaysia (25), 24.5% in Samara [26], 26% in Iran [27], and 13% in Iraq [28]. But it was lower than 47.8% in Tigray, Ethiopia [13]. The findings from this study are somewhat higher than those of the most studies conducted previously. This could be due to the study population being health science students that makes them more likely to know about and have a positive attitude toward blood donation. Having good knowledge and a positive attitude toward blood donation are the reinforcing factors for the practice of blood donation.

Respondents aged 23 years and above increased the odds of practicing blood donation by 2 times than those who aged

younger than 23 years old. This study revealed that the increased age of respondents was significantly associated with blood donation. This finding was in line with a study conducted elsewhere [9, 10, 13, 21]. This could be due to the increase in age, which may be associated with increased knowledge and attitude towards the practice of blood donation. However, this finding was inconsistent with a study conducted in the Riyadh city [16].

Respondents who were from urban areas practiced blood donation 2.5 times more than those who were from rural residents. Being from an urban resident was strongly associated with the practice of blood donation. This might be due to the awareness and positive attitude about blood donation as a result of frequent awareness campaign programs conducted in urban than in rural areas through different mass media exposures.

Respondents with mothers who had completed primary school education increased the odds of practicing blood donation 2.4 times than mothers with no formal education. This study was also supported by a study conducted in Ambo [12]. This could be due to the fact that educated mothers are more likely to discuss and make their children aware about socio-cultural and health-related issues, including blood donation, since there is an African proverb "educating a mother is considered as educating a family and the community as a whole" [29].

More than three-fourth (82.9%) of the donors had good knowledge of blood donation. Respondents with good knowledge of blood donation were 3 times more likely to practice blood donation than respondents with poor knowledge of blood donation. Having good knowledge was strongly associated with the practice of blood donation. This finding was consistent with a study conducted elsewhere [13, 15, 21]. This finding was also contrary to a study conducted in Harar town, which revealed that the proportion of donors with good knowledge about voluntary blood donation was significantly lower than the proportion of donors voluntarily with poor knowledge [11].

Ninety (64.3%) blood donors had a positive attitude toward blood donation. Respondents with a positive attitude toward blood donation were 1.7 times more likely to practice blood donation than those with a negative attitude toward blood donation. This study is in line with studies conducted in other areas [13, 21]. This is because the positive attitude of individuals had a positive effect on their practice.

CONCLUSION

The practice of blood donation is not adequate among study populations. Therefore, the consideration of encouragement campaigns and educational sessions within the campus will play paramount importance in the increment of blood donation practice.

LIST OF ABBREVIATIONS

AOR	=	Adjusted Odds Ratio
CI	=	Confidence Interval
COR	=	Crude Odds Ratio
MAHSC	=	Mizan-Aman Health Science College
SPSS	=	Statistical Package for the Social Sciences
SD	=	Standard Deviation
WHO	=	World Health Organization

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from Mizan-Tepi University Institutional Review Board (MTU-IRB). Ethiopia. Ethical approval was given on 12/05/2019 with the number MTUIRB/126/2019.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Written informed consent was also obtained from each participant before participation in the study.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author, [TY], upon reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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