FACTORS ASSOCIATED WITH VOLUNTARY BLOOD DONATION AMONG LIRA UNIVERSITY STUDENTS. CROSS-SECTIONAL STUDY.

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Abstract
According to UBTS, the total units of blood collected increased from 131,226 in 2007/2008 to 274,308 in 2018/19 but still less than the WHO recommendation of 1% of Uganda's population. To save the lives of patients due to accidents, obstetric and gynecological bleedings, cancers, and severe anemia with low blood volumes. This study will assess the factors associated with voluntary blood donation among Lira University students.

Methodology
A cross-sectional study using mixed methods of data collection was carried out among Lira University students. A sample size of 311 was calculated using the Yamane formula and recruited using a stratified random sampling technique and 5 key informants for qualitative data. SPSS version 20 was used for data entry and analysis. Univariate analysis was used to determine frequencies, proportions, and ranges. At bivariate analysis, a bivariate logistic regression was performed between the independent variables and dependent variable at a 95% confidence interval, Crude odds ratios (COR) were used as measures of association. Variables with P ≤0.05 were considered significant associations with the dependent variable.

Results
Their mean age was 23.7 years. The study population comprised approximately 40.5% blood donors of which 23.8% were blood donors. The majority of the participants (79.8%) had positive attitudes towards blood donation and the non-donors (61.7%) had never got a chance to donate. The majority of the respondents (59.5%) were male.

Conclusion
High awareness, influencing positive attitude, and regular blood donation drives should be prioritized if we are to achieve 1% donors of the population as recommended by WHO**.**

Recommendation
The Uganda Blood Transfusion Service should do more talk shows via announcements in public gatherings, and mouth-to-mouth engagements with the students, and handle first-time donors well to recruit and retain donors.

Introduction

Blood is a vital fluid in the body that contains white blood cells, red blood cells, platelet clotting factors, and plasma. Red blood cells carry oxygen, white blood cells provide the body's immunity against pathogens and the platelets facilitate clotting during tissue damage (Ware, 2020). A key problem with blood is its perishability within weeks. However, blood can be collected and stored for 1-1.5 months (Larsson, 2022). Scientists up to now have not been successful in producing blood in laboratories therefore a constant need for donors if fresh blood is needed (Hashemi, 2022). Scientists have been able to categorize blood based on the availability of Antigens on Red Blood Cells (A, B,) or (O) non-antigen and Rhesus factor groups (Guelsin et al., 2015). This has reduced complications and risks that were associated with blood transfusion. However today according to technological and health improvements blood can be drawn, screened, stored, and transfused to those who are in need to save their lives

Globally, it is estimated that 118.5 million voluntary, family or replacement, and paid blood donations were made in 171 countries in 2019, unfortunately, 60% of this blood is collected from paid commercial and family replacement blood donors rather than from voluntary, nonremunerated, low-risk donors (Ugwu et al., 2020). In

sub-Saharan Africa, only 0.5% of the population donates blood voluntarily. This explains the low availability of blood and the heaviest burden of mortalities due to inadequate blood for transfusion on the African continent (Ngunza et al., 2020).

In East Africa, the blood donation rate is very low at 5.1/1000 inhabitants ranking it the second last compared to other regions of Africa, according to WHO the standard blood donation rate is 10/1000 inhabitants (WHO, 2023) WHO recommends that a country should collect 1% blood units of its population (World Health Organization, 2020). Uganda has a population of over 45 million, 450,000 units are expected to be collected at least annually, but we collect only 300,000 units. Students are Uganda's biggest blood donors adding that Uganda has around 80,000-90,000 registered blood donors and most of them donate twice a year most blood shortages in Uganda are due to long-term holidays (Mishra et al., 2016).

Lira has a blood Bank at Lira Regional Referral Hospital, the hospital, which is the Chief consumer of blood collected 12,000 units of blood per year instead of the target of 15,000 units set by the Uganda Blood Services (Opoka et al., 2018). Maintaining an adequate and safe blood supply in national blood banks should be an integral component of every country's national health care policy because human beings may be faced with unpredictable circumstances, such as surgery, trauma, accidents, and anemia, in which they could require an urgent blood transfusion, therefore, unavailability of blood for transfusion may result into death (World Health Organization, 2008)

The Uganda Blood Transfusion Service (UBTS) is an autonomous government institution in charge of managing all aspects of blood transfusion (collection, processing, storage, distribution) and ensuring its safety in Uganda. Formed in 1957 as an independent institution with the headquarters in a former Asian and European hospital at Nakasero Hill, Kampala, acting as a reference Centre initially supplied all the required blood to both the regional blood banks and other public and private hospitals for 20 years. In the 1960s and 70s, blood donors traveled free in both buses (Uganda Transport Company, People's Transport Company) and trains (Uganda Railways) operated by the government. However, due to civil strife and war in the 1970s and 1980s, equipment maintenance became insufficient, resulting in a shortage of blood (Yates et al., 2006)

The UBTS was established as an autonomous body in 1957 to collect and process blood with support from the European Union. By this time Mbarara and Fortportal Regional Blood Banks were operating as well, including sub-regional blood banks at Kitovu, Angal, and Matany hospitals. Later on, it was, commissioned in January 2003 by a board of Directors operating by the guidelines laid out in the National Health Policy (NHP) and the Health Sector Strategic Plan (HSSP) to guide the implementation of blood safety activities for the attainment of the best possible technical and ethical standards (UBTS, 2020).

Until the eighties, Uganda operated a hospital-based blood transfusion system. In 1989, the former Asian and European hospital was renovated by the European Union fund (now Nakasero Blood Bank, the Uganda Blood Transfusion Headquarters), and by 1990 it started operating centralized blood banking and voluntary blood donation drive. Before the blood bank was providing blood within a limited area of central Uganda, within a 100km radius of Kampala in 1989

The UBTS has expanded and has developed into a network of seven Regional Blood Banks, namely Arua, Fortportal, Gulu, Kitovu, Mbale, Mbarara, and Nakasero. Additionally, the UBTS operates six blood collection centers in Hoima, Jinja, Kabale, Rukungiri, Lira, and Soroti. Before 1989, the primary system of blood collection relied on replacement donation, with very few Voluntary Non-Remunerated Blood Donors (VNRBD) being involved this increased percentage of VNRBD gradually increased to 85% (Laura, 2019)

Although lack of awareness, misconception, lack of motivation, and several individual, service, and community factors are known to influence voluntary blood donation, the specific factors hindering and motivating voluntary blood donation among Lira University students are not known. This study assessed the factors that were hindering or motivating voluntary blood donation among Lira University students.

Methodology
Study design and setting
A cross-sectional study was conducted to provide a snapshot of the relationships between different variables among Lira University students at that particular time hence giving a comprehensive understanding of both the quantitative and qualitative characteristics and interrelationships.

The study was conducted at Lira University, a government-funded institution of higher learning that started as a constituent college of Gulu University in 2009 in northern Uganda. Lira University is located at Ayere village, Bar Apwo parish, West division, Lira city, Lira District. It is off Lira-Kampala road, 13 km away from Lira city. Latitude 2.25267° or 2° 15' 10" north, Longitude 32.83357° or 32° 50' 1" east and Open Location Code 6GJJ7R3M+3C.

Study population
Sample size and sampling technique
The target population was university students and the study population was undergraduate students enrolled at Lira University at the time of study.

For qualitative data, the key informants were health workers, blood donor recruiters, counselors, and blood collectors (phlebotomists).

The sample size was determined using the Yamane formula n = (Uakarn et al., 2021)where N=1350 and e=0.05.Considering a non-response rate of 10%, this resulted in an overall sample size of 339 participants.

Participants were selected using Stratified sampling method to ensure that subgroups such as university faculties and sex (public health =23(13 males, 10 females), nursing and midwifery=60(26males, 34 females),education=88(66 males, 22 females), medicine=27(16 males,11 females), Computing and technology=21(15 males, 6 females), management science=92(49 males, 43 females), and year of study (year 1=114, year 2=81, year 3=101 and year 4= 15) such that all groups within the study population were adequately represented in the sample, thus minimizing the impact of selection bias. Then a sample was identified from each stratum by simple random sampling proportional to it's in the overall population.

Data collection tools.
Upon ethical committee clearance by the Lira University ethics committee, the researcher sought permission from the gatekeeper, dean of students, and dean of faculties to carry on the study. The researcher recruited and trained the research assistants on the procedures to take when administering the study tools to those who meet the inclusion criteria.

The researcher recruited and trained the research assistants on the procedures to take when administering the study tools to those who meet the inclusion criteria. Data collection was done by using researcher researcher-administered questionnaire consisting of structured questions and Key informant interviews (KIIs) using a guide to obtain qualitative data both written in English. This was done after telling the participants what the study was about, benefits, expectations, outcomes, personal rights, and after consenting to participate in the study.

Qualitative data collection commenced at a stage at which new data no longer brought additional insights, themes, or information to the study to ensure that the depth and breadth of the factors influencing voluntary blood donation were explored achieved through conducting numerous interviews, analyzing the existing data exhaustively and continuously comparing new data with previously collected data.

Data entry and cleaning
The responses to the questionnaires were entered into computer software SPSS version 20.
Incomplete, inaccurate, or irrelevant data was identified and then either replaced, modified, or deleted.

Data analysis
Quantitative data, after checking the data for completeness, was coded and fed into the Statistical Package for Social Sciences (SPSS) version 20 for analysis. Quantitative data was edited for correctness, completeness, and consistency after collection, and Univariate analysis of the data was presented in the form of frequency and percentages using SPSS version 20.
At bivariate analysis, a bivariate logistic regression was performed between the independent variables and dependent variable at a 95% confidence interval, Crude odds ratios (COR) were used as measures of association. Variables with P ≤0.05 were considered as having significant associations with the dependent variable.

The results were presented in the form of texts, tables, charts, and graphs for easy interpretation, discussion, and comprehension.

For qualitative data, manual data analysis was used for sorting, organizing, and analyzing data.

Ethical considerations
Ethical approval to conduct the study was obtained from the Lira University Research Ethics Committee and approval was issued under rec number LUREC-2023-67. Upon ethical clearance from the Lira University Research Ethics Committee.

Administrative clearance to conduct the study was sought from both the university administration and the Lira regional referral hospital director. Written informed consent was sought from all the participants, in this study, these were university students undertaking a program, blood donor recruiters, and phlebotomists after sharing with them the objectives of the study, possible benefits, and risks of the study. Identifiers such as names, phone numbers, or personal addresses were not included in the questionnaires to protect the participants' privacy. Codes were used to identify participants. The hard copy of the questionnaires was kept under lock and key and only accessible by the research team.

Results
Out of the 308 participants in the study, data was only collected from 311 participants at Lira University. This resulted in a response rate of 100%.
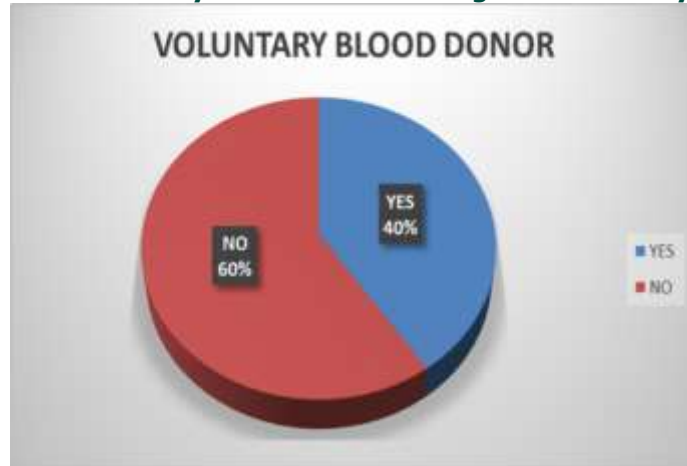
UNIVARIATE ANALYSIS
The majority of the respondents (59.5%) were male. The age groups with the majority (77.5%) were 20-24 years The biggest proportion were Anglicans (42.8%), and the lowest were Muslims (7.1%). The majority of the respondents (29.6%) were from the faculty of Management Science, and the least from Computer Science (6.8%). The majority of the respondents were Year 1 Students (36.7%), and the least was Year 4 (4.8%). The majority of the respondents were from the Northern Region (56.9%), and the lowest proportion was from the Western region (11.3%). The study also assessed for any form of disability among respondents and the majority had some form of disability (86.2%), with Lameness (6%) contributing to the lowest proportion.

Proportions of voluntary blood donors among Lira University students.
Results revealed that 40% of the participants had ever donated blood either once, twice or more than two times and 60% had never donated blood.

Figure 1: Proportions of voluntary blood donors among Lira University students.

Bivariate analysis of socio-demographic factors

The age group (40-44 years) is significantly associated with blood donation compared to other age groups (p<0.001). Having no disabilities is significantly associated with being a blood donor (p-value = *0.032*). Eye Sight impairments are significantly associated with being a blood donor compared to those without any disabilities (P-value = *0.032*).

Table 1: The bivariate analysis of social demographic factors

Variable	BLOOD DONOR		Total	COR (95% CI)	P-value
	YES	**NO**			
Age In Years					
20-24	92(38.2)	149(61.8)	241(77.5)	REF	1
25-29	19(33.9)	37(66.1)	56(18.0)	0.54(0.055-5.268)	0.133
30-34	3(50.0)	3(50.0)	6(1.9)	0.67(0.06-6.67)	0.659
35-39	2(50.0)	2(50.0)	4(1.3)	0.33(0.04-5.33)	1.317
40-44	1(25.0)	3(75.0)	4(1.3)	0.33(0.02-6.66)	*0.000*
Sex					
Male	68(36.8)	177(63.2)	185(59.5)	REF	1
Female	49(38.9)	77(61.1)	126(40.5)	1.20(0.69-1.74)	0.244
Religion					
Catholics	43(42.6)	58(57.4)	101(32.5)	REF	1
Anglican	48(36.1)	85(63.9)	133(42.8)	1.52(0.51-4.52)	0.704
Muslims	6(27.3)	16(72.7)	22(7.1)	0.771(0.39-1.52)	0.145
Other	20(36.4)	35(63.6)	55(17.7)	1.12(0.53-1.94)	0.375
Faculty of Study					
Public Health	7(30.4)	16(69.6)	23(7.4)	REF	1
Nursing and Midwifery	26(43.3)	34(56.7)	60(19.3)	1.190(0.446-3.172)	0.7229
Management Sciences	30(32.6)	62(67.4)	92(29.6)	0.716(0.278-1.844)	0.489
Education	34(38.6)	54(61.4)	88(28.3)	1.182(0.463-3.019)	0.726

Medicine	9(33.3)	18(66.7)	27(8.7)	1.244(0.402-3.853)	0.705
Computing and Technology	11(52.4)	10(47.6)	21(6.8)	2.20(0.623-6.6910)	0.235
Year of Study					
1	46(40.4)	68(59.6)	114(36.7)	REF	
2	32(39.5)	49(60.5)	81(26.0)	0.665(0.370-1.194)	0.172
3	34(33.7)	67(66.3)	101(32.5)	0.746(0.454-1.346)	0.374
4	5(33.3)	10(66.7)	15(4.8)	0.596(0.192-1.855)	0.372
Disability.					
No form of disability	96(35.8)	172(64.2)	268(86.2)	REF	1
Sight	17(54.8)	14(45.2)	31(10.0)	2.289(1.076-4.871)	**0.032**
Hearing	4(40.0)	6(60.0)	10(3.2)	1.653(0.467-5.852)	0.436
lame	0(0.0)	2(100.0)	2(0.6)	26711311706(0.0-	
Region					
Northern	65(36.7)	25(58.1)	177(56.9)	REF	1
Eastern	18(41.9	24(68.6)	43(13.8)	1.535(0.783-3.010)	0.212
western	11(31.4)	24(68.6)	56(18.0)	1.324(0.634-2.765)	0.455
Central	23(41.1)	33(58.9)	56(18.0)	1.644(0.896-3.017)	0.109

INDIVIDUAL FACTORS.

The results showed that 14.5% (45/ 311) of the blood donors had donated blood previously (Table 3 Appendix VII). Among those with prior experience, the majority (61.7%) had never donated blood and the minority (10.6%) had ever donated twice or more.

Among the barriers, results showed the most common barrier was perceived risks 37.6% (117/311) and a minority cited religion (2.9%) as the barrier to voluntary blood donation. A significant portion of the respondents 57.2 % (178/311) reported that the facilities offering voluntary blood donation services were convenient for participants to access them

The majority of participants 97.4% (248/117) who had donated blood reported that they were handled well during the process. The majority of the participants expressed positive attitudes towards voluntary blood donation 79.7% (248/311). While 46.0% (143/311) reported receiving satisfactory information from healthcare workers regarding blood donation. Almost half of the participants were aware of 58.8% (183/311) of facilities that carried out voluntary blood donation.

The majority 61.7 % (192/311) received information from posters and flyers about blood donation, 50.5 % (157/311) while the minority received information from social media advertisements and posts 8.0% (25/311). A minority of the participants received information by text messages 8.0 % (25/311) and the majority reported word of mouth as a source of information about voluntary blood donation. 38.9% (121/ 311).

Among the factors that would encourage participants to donate blood, a minority reported extended operating hours for blood donation programs at schools 22.5% (70/311) and a minority reported regular blood donation drives at schools 42.4% (132/311). Furthermore, the minority reported availability of mobile blood donation units in the community 47.9 % (148/311), the minority short waiting hours at donation centers 38.9 % (121/311), and the minority reported incentives like snacks, refreshments, and donation cards 46.9% (146/ 311).

The bivariate analysis for Individual Factors.

Students who have donated blood more than twice in the past are 3.6 times more likely to donate again compared to those who have never donated (COR = 3.592, p-value = 0.1225) Participants with a positive attitude towards blood donation are 7.4 times more likely to donate than those with a negative attitude (COR = 7.380, p-value < 0.001).

Students who are aware of a blood donation facility are 1.8 times more likely to donate than those who are not (COR = 1.846, p-value = 0.009). Those who get information through posters and flyers are 1.7 times more likely to donate than those who do not (COR = 1.700, p-value = 0.029)

Regular blood donation drives at the university were also significantly associated with voluntary blood donation (COR = 0.563, p-value = 0.014).

Table 2: Showing the bivariate analysis of individual factors associated with voluntary blood donation among Lira University students.

Variable	BLOOD DONOR		Total	COR (95% CI)	P-value
	YES	NO			
Experience					
Once	38(12.2)	7(15.6)	45(14.5)	REF	1
Twice	29(9.3)	4(1.3)	33(10.6)	1.336(0.357-5.00)	0.668
More than two	39(12.5)	2(0.6)	41(13.2)	3.592(0.701-18.402)	0.1225
Never	20(6.4)	172(55.3)	192(61.7)	0.021(0.008-0.054)	*0.000*
Barrier					
Fear of injection	11(3.5)	36(11.6)	47(15.1)	REF	1
Religion	3(1.0)	6(1.9)	9(2.9)	1.663(0.350-7.646)	0.531
Perceived risks	18(5.8)	99(31.8)	117(37.6)	0.595(0.256-1.380)	0.227
I have never had a chance to donate.	8(2.6)	36(11.6)	44(14.1)	0.727(0.262-2.019)	0.541
Convenience of donation facility					
Convenient	75(24.1)	103(33.1)	178(57.2)	REF	1
Not Convenient	51(16.4)	82(26.4)	133(42.8)	1.171(0.74-1.853)	0.501
How were you handled During the process?					
Badly	2(1.7)	1(0.9)	3(2.6)	REF	
Well	102(87.2)	12(10.3)	114(97.4)	4.250(0.358-50.440)	0.252
Attitude					
Negative	7(2.3)	56(18.0)	63(20.3)	REF	1
positive	119(38.3)	129(41.5)	248(79.7)	7.380(3.236-16.828)	*0.00*
Do health workers give you satisfying information?					
NO	19(6.1)	53(17.0)	72(23.2)	REF	1
YES	69(23.8)	74(22.2)	143(46.0)	2.392(1.505-3.802)	*0.000*
Are you aware of any facility that carries out voluntary blood donation?					
No	63(20.3)	120(38.6)	183(58.8)	REF	1
Yes	63(20.3)	65(20.9)	128(41.2)	1.846(1.164-2.929)	*0.009*
How do you receive information about blood donation **Posters and flyers**					
No	39(12.5)	80(25.7)	119(38.3)	REF	1
Yes	87(28.0)	105(33.8)	192(61.7)	1.700(1.055-2.738)	0.029
Social media adverts and posts					
No	68(21.9)	86(27.7)	174(49.5)	REF	
Yes	58(18.6)	99(31.8)	157(50.5)	0.741(0.471-1.167)	0.196
Text messages					
No	117(37.6)	169(54.3)	286(92.0)	REF	1
Yes	9(2.9)	16(5.1)	25(8.0)	0.632(0.813-0.347)	0.632
Word of the mouth					

No	80(25.7)	109(35.0)	109(35.0)	REF	1
Yes	46(14.8)	75(24.1)	121(38.9)	0.836(0.524-1.33)	0.836

What factors make or would make you donate blood

Extended operating hours at school for blood donation program.

NO	98(31.5)	143(46.0)	241(77.5)	REF	1
YES	28(9.0)	42(13.5)	70(22.5)	0.973(0.565-1.674)	0.921

Regular blood donation drives at school

NO	62(19.9)	117(37.6)	179(57.6)	REF	1
YES	64(20.6)	68(21.9)	132(42.4)	0.563(0.356-0.892)	*0.014*

Availability of mobile units in the community

NO	59(19.0)	103(33.1)	162(52.1)	REF	1
YES	66(21.2)	82(26.4)	148(47.9)	1.405(0.891-2.216)	0.343

Short waiting hours

NO	71(22.8)	119(38.3)	190(61.1)	REF	1
YES	55(17.7)	66(21.2)	121(38.9)	1.397(0.879-2.219)	0.157

Incentives (snacks, refreshments, and donation cards)

NO	71(22.8)	93(29.9)	164(52.7)	REF	1
YES	54(17.4)	92(29.6)	146(46.9)	0.769(0.487-1.214)	0.259

(Primary data)

QUALITATIVE RESULTS
HEALTH CARE SERVICES FACTORS.

The health workers reported that consumables were available throughout the year for example one of them said

" So for the field staff, and that one is catered for because all the field team is paid a daily allowance for every time they go out to the field. They are OK, they get it at the end of the month, but it is calculated daily. When you go to the field there's some money allocated to it except for food…… feeding is on you" **(Primary data)**

Training

Health workers reported that they get regular training for example most of them reported …..*"We don't go and have it out. We have once in a while. Most especially people come and train us from here……... Or maybe some people go for training outside but mostly we have the training here, but once in a while they go out and the training is always done here. But sometimes we get blood donors in big numbers and soda gets done."* **(Primary data)**
This was associated with the knowledge they had about the whole process of voluntary blood donation. Health workers were aware of most of the eligibility criteria for recruiting blood donors for example ………..one of the health workers said
…………………."*So generally for you to donate blood, you should be perfectly fine without a history of those chronic illnesses such as high blood pressure,…….not on*

medication, we also assess whether someone has just got any vaccine, for example, yellow fever, we measure the weight, it must be greater than 50 kilograms, we also do hemoglobin test because when you're sick or you're on any medication…….. And you donate blood, it can affect the results that may give us a false positive" **(Primary data)**

Natural Calamities

During the organization of these mobile donation drives health teams are faced with weather changes that fail the programs. For example one of them said
……"*The first challenge is natural calamity, the weather. When you're planning to go and then the rain comes, it affects your work………..you find that you can't go and settle in the rain. As it is raining, Secondly, sometimes maybe the time that people report, people come late or maybe you have organized a session in the school and they need us there by 9:00 am. So reaching school late, you find they have taken back students in class for lessons, so this means the program will also begin late".* **(Primary data)**

Beliefs

"*When we go to the community, some people believe that when you donate you get blood pressure…………so for us, we ask them to ask those people with blood pressure to see whether they have ever donated………secondly, some*

believe that when they donate blood they will die because they will finish their blood.
Then others believe that when they have donated for the first time they should donate continuously because if they stop something bad may happen to them… yet you can even donate once and stop.
They also have a stupid belief that when you donate blood and then take Mirinda fruity soda you replace the blood because it looks more like blood. **(Primary data)**

Institutional Barriers.
When we go to some schools you find that school heads don't want to involve their students in blood donation…. I don't know why! But I think they believe when their students get involved in blood donation it will affect their academic performance.
Some schools have never allowed us to carry out our program and we have given up on them.
But what we do is when it school times we focus on schools and when its holidays we focus on the community…………and it's a regular thing there is no day that we don't collect blood because what we collect is being used……..so when we don't collect, patients who need blood will die.....so it's a constant flow". **(Primary data)**

Religion
"Yeah some religions don't allow blood donation and transfusion, for example, I witnessed the Jehovah's Witness… for them, the person rather die than have a blood transfusion that is not accepted by God." **(Primary data)**

Peer Pressure
For example in schools when one person faints they get scared, which creates fear and they will all stop donating because of the fear…….. Secondly, the girl children most time don't donate because they fear being seen by their boyfriends……or some donate and don't want to take soda because of fear of being seen by their boyfriends. **(Primary data)**

Fear of HIV results
"When we go in the community, people fear because they know when they donate blood it's going to be tested for HIV. Do you know that the general population fears getting HIV results? Some think blood finally gets spoiled and they pour it." **(Primary data)**

Discussion
This study assessed the individual, community, and health facility factors associated with voluntary blood donation and the response rate was theoretically 100%. This response rate is similar to indicative of no missing data, accuracy, and reliability of the data collected.

Prevalence
The proportion of blood donors at Lira University is 40.5%, this value was relatively similar to study results from Wollega University, Ethiopia (40.8%) though lower than in Tigray (47.8%) but higher than that from the findings of the study in Debre Markos (16.1%), 35 Mizan-Aman Health Sciences College (35.5%), 39 Ambo University (23.6%),28 and Gondar University students. The differences could be due to methodology and differences in methods because the study at Wollega University recruited participants using a lottery method. The difference could also be due to differences in social demographic factors like religion for example majority were Orthodox (Shama et al., 2022)

Social Demographic Factors
Among the social demographic factors, age was significantly associated with voluntary blood donation where students between 30-34 years were 0.67 times more likely to donate blood compared to other age groups. This was also observed in studies done among College Students in Southwest Ethiopia where individuals above 24 years had more odds of donating blood (Dejene et al., 2021) and one done among University Students in Kilimanjaro, Tanzania showed that individuals between 24-35 years were more likely to donate (Elias et al., 2016). The similarity could be due to similarity in social demographic factors like the age of the participants and education level. However, the results were different for a study carried out in central Ethiopia where 18–25 years was significantly associated with blood donation practice. The difference could be differences in knowledge because in this study 47% of the participants had average knowledge, 48% had positive attitudes towards, the study being exclusively done among medical students only, and sampling techniques where multistage sampling was used (Beyene, 2020).

INDIVIDUAL FACTORS
The study revealed that individuals who had donated more than two twice were 3.59 times more likely to donate. These results align with other studies that were carried out to donate blood in the future among university students in Kilimanjaro (Elias et al., 2016) and the University of Benin(Di Pietro et al., 2020). The similarity could be due to similarities in social demographic factors like level of education, age, and mobilization strategies for example collection of blood majorly from voluntary blood donors in low-risk populations, and centralized systems of collecting blood though Uganda is just turning away to a decentralized system.
Among the motivating factors, individuals who had a positive attitude towards voluntary blood donation were 7.38 times more likely to donate blood compared to those with a negative attitude. These results were also true for a study published by the National Library of Medicine carried out among college students in Bhubaneswar City (Raghuwanshi et al., 2016) and college-going students in

India(Mishra et al., 2016). The similarity could be due to similarities in social demographic factors such as the majority being non-medical, and using similar stratified sampling techniques

During the bivariate analysis, the provision of sufficient information to students was associated with the practice of voluntary blood donation (COR=2.392, CI =1.505-3.802). Students who received sufficient information about the process were 2.392 times more likely to donate blood compared to were not given satisfying information about blood donation This is also backed by a similar study carried out among health professional students in Saudi Arabia(Alsalmi et al., 2019), Qatar University (Ibrahim et al., 2021), and Gondar town, Northwest Ethiopia (Melku et al., 2016). This can be explained by the health belief model, individuals who have a good understanding of the perceived risk, perceived benefits, and severity are more likely to have a positive attitude towards a certain practice. This was also backed up by the qualitative reporting from health workers where health workers said they give information through radio talk shows and physical meetings of donors (mouth to mouth) for example one of the health workers reported

"We give information to the community or these students to about our programs on voluntary blood donation. Ok? We always run our what? Our talk shows on the radio. We also announce announcements in social gatherings like churches. But for students specifically, we meet them physically and talk to them before we engage them." **(Primary data)**

The presence of regular voluntary blood donation drives was associated with voluntary blood donation. The results revealed that regular blood donation drives would influence an individual's willingness to donate (COR=0.563, 95%:CI0.356-0.892). These results deviate from those obtained among university students of Grenada (Hewitt & Messam, 2018). The difference could be due to the use of different study methodologies for example the study employed the use of case-control design and social demographic factors such as race i.e. the study population being dominated by whites.

Bivariate analysis revealed that students being aware of a health facility that carries out voluntary blood donation were more likely to donate blood. Participants who were aware of the health facility were 2 times more likely to donate blood than those who didn't know**.** This is also backed by qualitative data from health workers. One of the health workers said

"When some students miss to donate in schools……... They come here and donate because mostly they want to know their blood types and also want to get donation cards. And then we also have our WhatsApp groups for donors especially those with blood type O- so when we pass communication students come willingly to help and save the lives of patients." **(Primary data)**

Conclusion
The overall prevalence of blood donors among Lira University students was 40.5% with the majority having a positive attitude and being willing to donate in the future when services and opportunities are available.

Age of the participants was significantly associated with voluntary blood donation (p-value<0.05), the motivating factors (experience), providing sufficient information by health workers (p-value<0.05), having a positive attitude (p-value<0.05), regular blood donation drives at school (p-value<0.05), and students being aware of health facility that carries with voluntary blood donation services (p-value<0.05).

Recommendations
The Uganda Blood Transfusion Service should do more talk shows via media, announcements in public gatherings, and more mouth-to-mouth engagements with the students because individuals who know the process are more likely to donate.

The Blood Banks should recruit as many first-time donors as possible because those students with experience are more likely to donate blood compared to those who have no experience.

On top of other communication strategies, the Blood collection centers should embrace social media platforms as a way of advertising and retaining blood donors' for example health workers reported the use of WhatsApp groups for their donors.

The Blood Banks should communicate their physical addresses during mobilization and community engagements because students who are aware of the location of the facility are more likely to donate.

The Blood Banks should engage school administrators, church leaders, and community leaders in the planning and mobilization of blood donation drives.

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LIST OF ACRONYMS
AIDS	Acquired Immunodeficiency Syndrome
CDC	Centre for Disease Control
CEHURD	Centre for Health Human Rights and Development
HIV	Human Immunodeficiency Virus
HSSP	Health Sector Strategic Plan
IBM	Integrated Behaviour Model
NHP	National Health Policy
SPSS	Statistical Package for Social Science
TPB	Theory of Planned Behaviour
UBTS	Uganda Blood Transfusion Services

UNICEF	United Nations Children's Fund.
URCS	Uganda's Red Cross Society
VNRBD	Voluntary Non-Remunerated Blood Donors
WHO	World Health Organisation

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The author declares no conflict of interest

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