Journal of Advances in Medical and Pharmaceutical Sciences

Volume 26, Issue 9, Page 1-16, 2024; Article no.JAMPS.122056
ISSN: 2394-1111

Knowledge Attitudes and Practices of Voluntary Blood Donation among University Students in Nigeria: A Descriptive Cross Sectional Study

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Authors' contributions

This work was carried out in collaboration among all authors. Author SAS contributed to the study design and data collection and performed the data analysis. Authors EEM, NMM, AAI, COA, PIO, MEA, NCD and ONE contributed equally to data collection, data analysis and approved the manuscript for publication. All authors read and approved the final manuscript.

Article Information

DOI: https://doi.org/10.9734/jamps/2024/v26i9710

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/122056

Original Research Article

Received: 08/08/2024
Accepted: 17/08/2024
Published: 22/08/2024

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Cite as: *Saka, Sulymon A., Eromosele E. Mavis, Nneoma M. Mezu, Ayotunde A. Isiaka, Collins O. Asogwa, Perpetua I. Odafen, Marvelous E. Akhigbe, Nzomiwu C. David, and Obiajulum N. Emekolom. 2024. "Knowledge Attitudes and Practices of Voluntary Blood Donation Among University Students in Nigeria: A Descriptive Cross Sectional Study". Journal of Advances in Medical and Pharmaceutical Sciences 26 (9):1-16. https://doi.org/10.9734/jamps/2024/v26i9710.*

ABSTRACT

Background: Adequate and safe blood supply has remained a challenge in developing countries, including Nigeria. Young students can play a fundamental role in blood donation, saving the lives of many people; hence, studying their knowledge, attitudes, and practices related to blood donation is essential.
Objective: The objective of this study was to assess the knowledge, attitudes, and practices of voluntary blood donation among Ambrose Alli University students and the factors associated with the frequency of blood donation.
Methodology: A cross-sectional descriptive study was carried out at Ambrose Alli University, Ekpoma. A total of 250 students were recruited. Pretested questionnaires were used to assess their knowledge, attitudes, and practices related to voluntary blood donation.
Statistical Analysis: The responses were collated and analysed with the Statistical Package for Social Sciences (SPSS) v21. We utilized both descriptive and inferential statistical methods to analyse the data. where associations between blood donation practices and sociodemographic features of the respondents as well as knowledge of blood donation and sociodemographic features of the respondents were tested via chi-square tests where appropriate; $p < 0.05$ was considered statistically significant.
Results: The study revealed that the mean age of the respondents was 22.3 ($\pm$9.049) years, with females accounting for 51.6% of the sample. A total of 34% (85) have good knowledge, and the respondents have a positive attitude (mean 3.23) toward donation; however, only 13.6% have donated blood with a male-to-female ratio of 2:1. The study revealed significant associations between knowledge of blood donation and several sociodemographic features, including age ($p=0.003$), year of study ($p=0.025$), faculty of the respondents ($p<0.001$) and employment status of the father or male guardian ($p=0.035$). Furthermore, blood donation practices were significantly associated with the year of study ($p=0.028$) and faculty ($p<0.001$). Logistic regression analysis indicated that senior students were less likely to donate blood compared to first year students. Fourth-year students had an odds ratio (OR) of 0.20 (95% CI: 0.05–0.87, $P = 0.032$), and fifth-year students had an OR of 0.23 (95% CI: 0.06–0.93, $P = 0.039$).
Conclusion: Despite having a fair level of knowledge regarding blood donation as well as a positive attitude toward it, the respondents portray a poor practice culture with respect to blood donation.

Keywords: Blood donation; Nigeria; practice; university students; voluntary.

1. INTRODUCTION

Blood is essential to all living organisms and is particularly crucial in hospitals for treating patients, as there is no substitute for it and artificial blood remains in research phases. Blood transfusion is a vital medical practice that saves countless lives daily [1], particularly in developing countries like Nigeria, where high rates of pregnancy-related health issues, road accidents, and malaria-related deaths exacerbate the need for blood. According to the World Health Organization, blood donation rates vary significantly by income level, with high-income countries seeing 33.1 donations per 1000 people, middle-income countries like Nigeria at 11.7 donations, and low-income countries at 4.6 donations per 1000 people [2,3].

Nigeria faces challenges in maintaining a steady blood supply due to difficulties in recruiting new donors, strict eligibility policies, and societal lack of altruism [4]. Despite the WHO's recommendation for 100% voluntary, non-remunerated donations [5], family members in Nigeria are often pressured to donate or find replacement donors during emergencies, causing significant emotional and financial stress.

Myths and misconceptions about blood donation, such as fears of contracting diseases or health deterioration, further hinder voluntary donations. Cultural and religious beliefs also play a significant role in discouraging donations. For instance, many Nigerians believe that donating blood can lead to HIV infection, weaken their health, or is unnecessary if they are not in immediate need [6].

Studies show that knowledge, attitudes, and practices regarding blood donation vary widely. For example, a study in Karachi revealed that while many students had heard of blood donation, a significant portion had negative views about its effects on donor health [7]. In Ethiopia,

a baseline study found that a majority had adequate knowledge of blood donation, but misconceptions still persisted about its impacts [8]. Similarly, research in various Nigerian regions indicates mixed levels of knowledge and attitudes toward blood donation, influenced by cultural, educational, and socio-economic factors [9,10,11,12,6,13].

A study among medical students in resource-limited countries showed high levels of knowledge about blood donation, but many were unaware of specifics like the age limit for donation or the blood volume that could be drawn [14]. In contrast, a study in Tanzania found that most participants had knowledge of blood donation and their blood group, but still, misconceptions were prevalent [15].

The literature review on attitudes towards blood donation reveals varied perceptions across different regions and demographics [16]. In Wolaita Soddo, Ethiopia, 58.33% of 96 graduating health science students strongly agreed that blood donation should be voluntary, with the majority believing it does not adversely affect donors [17]. At Addis Ababa University, many students were willing to donate in the future despite concerns about blood donation causing weakness, anemia, and reduced immunity [18]. Similarly, a study at the University of Gondar showed that 86.7% had a positive attitude, with 73.3% agreeing that voluntary donors are crucial, though fear of side effects and lack of solicitation were barriers [19].

In Nigeria, attitudes were also positive but marred by fears of contracting infections and other side effects. At Lagos State University Teaching Hospital, 52.4% feared HIV transmission, and 47% were concerned about various side effects [12]. In Europe, a Eurobarometer survey highlighted a significant increase in blood donation between 2002 and 2009, with Austria, France, Greece, and Cyprus leading in donor percentages [20].

In South India, a majority of health science students had never donated blood, and only a small percentage were unaware of their blood group [21]. Family literacy and paid incentives were found to increase the likelihood of donation at Ambo University [22]. Contrarily, television viewers were less likely to donate due to psychological stress and content distractions [23]. Another study done in a blood bank of a tertiary care hospital of Kolkata, Eastern India revealed that 67.08% of the donors had a knowledge score of less than 5 and donors from urban areas, higher educational and socio-economic status as well as those who had previous history of blood donation had higher knowledge scores [24].

At Ebonyi State University in Nigeria, male students and those with a willingness to donate in the future were more likely to be donors. Socioeconomic status also played a role, with students from higher socioeconomic backgrounds more likely to donate [25]. Education and exposure to past donors were key predictors of donation intentions, with younger and better-educated individuals showing greater willingness to donate [26].

Despite the critical need for blood donations to support health care services, many regions continue to experience shortages. Understanding the factors influencing voluntary blood donation is essential to addressing these myths and misconceptions through education and awareness campaigns. Promoting the health benefits and safety of blood donation and encouraging voluntary donations can help ensure an adequate blood supply for medical needs. Public health initiatives must focus on dispelling fears, educating the public about the importance of blood donation, and fostering a culture of altruism to improve donation rates and save lives.

2. METHODS

2.1 Study Area

Ambrose Alli University (AAU) is a state-owned university located in Ekpoma, Edo state, Nigeria. Established in 1981 by the governor of Bendel State, Professor Ambrose Folorunso Alli, it was initially named Bendel State University, then Edo State University, and finally renamed in honor of its founder. The university is situated in Ekpoma town, which serves as the administrative headquarters of the Esan West Local Government Area. Ekpoma. The local government area houses several hospitals and clinics, and the university is affiliated with Irrua Specialist Teaching Hospital, where its medical students are trained. Irrua specialist Teaching Hospital is the major Hospital in Esan land.

2.2 Study Design

A descriptive cross-sectional study was conducted involving full-time undergraduate

students at AAU over five months, from January 2024 to July 2024.

2.3 Study Population

The study focused on full-time undergraduate students at Ambrose Alli University (AAU), Ekpoma. Students are admitted to the university after successfully passing the secondary school certificate examination and meeting the criteria set by the Joint Admissions and Matriculation Board (JAMB).

2.4 Sample Size Estimation

The Cochran formula was used for sample size determination: [27]

$$\underline{n}=z^2pq/d^2$$ [27]

where $\underline{n}$=minimum sample size
z= standard normal deviation (z score =1.96 at 95% confidence interval)
P =Proportion of the target population with a desired characteristic
p = proportion of respondents who donate blood whenever there is a need (based on a study conducted in South India) [21] = 15.6% = 0.156
q =1 – p = 1 – 0.156 = 0.844
d = degree of precision at the confidence level of 95% = 0.05

Substituting the values for the formula above yields sample size of 202

Allowance for nonresponse rate = 202/0.9 = 224 (the calculated minimum sample size was rounded to 250)

2.5 Selection Criteria

2.5.1 Inclusion criteria

1. Students who are available in school during the period of data collection
2. Students who are willing to participate, and
3. Students who are duly registered for the academic year.

2.5.2 Exclusion criteria

1. Students who refuse to participate

2.6 Data Collection Tools

Data were gathered using structured, interviewer-administered questionnaires that covered sociodemographic profiles, knowledge, attitudes, and willingness to donate blood. These questionnaires were developed following a thorough literature review.

2.7 Sampling Method

To ensure appropriate representation, students from Year 1 to Year 5 were considered. The total undergraduate population was estimated at 35,750. Proportional sampling was used across different year levels to meet the sample size of 250. Systematic sampling selected faculties in alphabetical order, with a specified number of students from each faculty.

2.8 Pretesting

Fifty questionnaires were pretested among 50 randomly selected students from the College of Education, Igueben.

2.9 Data Analysis

The data were analyzed using the Statistical Package for Scientific Solutions (SPSS) version 21. Descriptive statistics, including frequencies and proportions, summarized the variables of interest and inferential statistical methods were employed to test hypotheses and draw conclusions [28].

3. RESULTS

A total of 250 respondents participated in this study, for a response rate of 100%.

3.1 Sociodemographic Characteristics of the Respondents

As shown in Table 1, the majority of the respondents were aged between 21-25 years (47.6%) and most were single (97.2%).

3.2 Knowledge of Blood Donation

As shown in Table 2, over half of the students (53.6) do not know the minimum gap between blood donations, and 51.6% are uncertain about the existence of artificial blood. While 76.8% know cancer patients cannot donate blood and 74.4% identify blood group O as universal donor, significant knowledge gaps exist about disease transmission through blood transfusion.

The Fig. 1 shows the respondents' knowledge of blood donation among Ambrose Alli University students. The majority of the respondents had fair knowledge (43.60%).

According to Fig. 2, Most of the respondents (122) became aware of blood groups during hospital visits.

3.3 Attitude Towards Blood Donation

Regarding Table 3, to dichotomize the attitude score, means above 3 were classified as positive, 3 as neutral, and below 3 as negative. This shows that for most of the items, the respondents had a positive attitude toward voluntary blood donation. The overall mean attitude of 3.23, which is above the decision point of 3.0, shows that they have a positive attitude towards the practice.

Table 1. Sociodemographic features of the study respondents

Variable	Frequency (n=250)	Percent (%)
Age range (years)		
15-20	106	42.4
21-25	119	47.6
>2	25	10.0
Mean ±SD	22.3±0.45	
Sex		
Male	121	48.4
Female	129	51.6
Marital status		
Single	243	97.2
Married	7	2.8
Ethnic group		
Esan	121	48.4
Bini	18	7.2
Etsako	25	10.0
Others	86	34.4
Year of study		
First year	55	22.0
Second year	40	16.0
Third year	57	22.8
Fourth year	71	28.4
Fifth year	27	10.8
Faculty		
Law	34	13.6
Medical laboratory science	36	14.4
Clinical Science	36	14.4
Engineering	36	14.4
Agricultural science	36	14.4
Basic Medical Science	36	14.4
Education	36	14.4
Religion		
Christianity	238	95.6
Islam	8	3.2
African traditional religion	4	1.2
Employment status of father or male guardian		
Unemployed	45	18.0
Self employed	112	44.8
Salaried employment	82	32.8
Not applicable	11	4.4
Employment status of mother or female guardian		
Unemployed	29	11.6
Self-employed	123	49.2
Salaried employment	92	36.8
Not applicable	6	2.4

Table 2. Knowledge of blood donation among Ambrose Alli University students

Variable	Frequency(n=250)	Percent (%)
How did you know about your blood group?		
Preadmission screening	58	23.2
Blood donation	50	20.0
Hospital visit	122	48.8
Requirement for travelling	6	2.4
Requirement for driving licence	5	2.0
I don't know	9	3.6
Do you know about the rhesus system of blood grouping?		
Yes	91	36.4
No	99	39.6
I don't know	60	24.0
Is there artificial blood?		
Yes	34	13.6
No	87	34.8
I don't know	129	51.6
Can women donate blood while menstruating?		
Yes	37	14.8
No	128	51.2
I don't know	85	34.0
Blood donation cause anaemia		
Yes	72	28.8
No	89	35.6
I don't know	89	35.6
Person with history of drug abuse can donate blood		
Yes	24	9.6
No	179	71.6
I don't know	47	18.8
Pregnant women can donate blood		
Yes	9	3.6
No	185	74.0
I don't know	56	22.4
Can a person with any type of cancer donate blood?		
Yes	8	3.2
No	192	76.8
I don't know	50	20.0
A breastfeeding mother can donate blood		
Yes	39	15.6
No	136	54.4
I don't know	75	30.0
What is the minimum gap between two donations?		
Less than 3 months	20	8.0
3-4 months	71	28.4
6 months	25	10.0
I don't know	134	53.6
Which blood group is universal donor?		
O	186	74.4
A	13	5.2
B	3	1.2
AB	9	3.6
I don't know	39	15.6
Which of these can be transmitted through blood transfusion?		
Malaria		
Yes	75	30.0

Variable	Frequency(n=250)	Percent (%)
No	95	38.0
I don't know	80	32.0
HIV		
Yes	185	74.0
No	31	12.4
I don't know	34	13.6
Hepatitis B		
Yes	96	38.4
No	54	21.6
I don't know	100	40.0
Lassa fever		
Yes	103	41.2
No	62	24.8
I don't know	85	34.0
Yellow fever		
Yes	72	28.8
No	76	30.4
I don't know	103	40.8
Ebola		
Yes	108	43.2
No	56	22.4
I don't know	86	34.4
What is your blood group?		
O	106	42.4
A	42	16.8
B	17	6.8
AB	11	4.4
I don't know	74	29.6

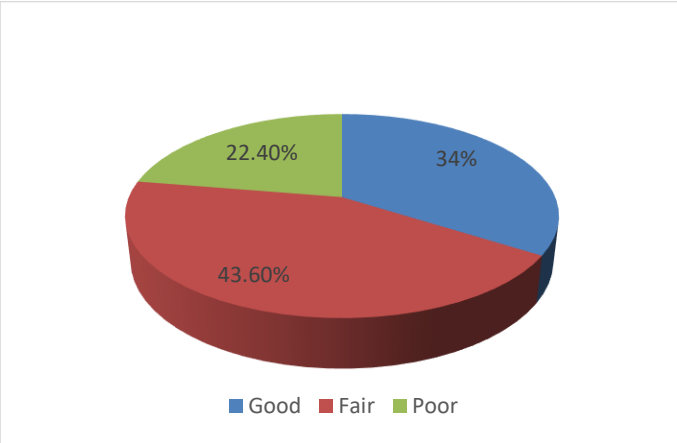

Fig. 1. Knowledge scores of the respondents

3.4 Willingness to Donate Blood

As shown in Table 4, only 13.6% of the students have donated blood before, with 67.6% of these donations made to save lives. Fear of needles (10.0%) and contracting diseases (11.2%) are common reasons for not donating.. Despite this, 59.6% are willing to donate to strangers, 82.0% to family or friends, and 70.4% would accept blood donation if needed.

According to Table 5, the year of study and faculty of respondents are factors associated with the practice of blood donation among Ambrose Alli University students.

According to Table 6 above, age, year of study, faculty and employment status of the father or male guardian were associated with knowledge of blood donation among the students.

Table 3. Attitudes of Ambrose Alli University students towards blood donation

Variable	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	Mean	Remark
I feel something harmful can h during blood donation.	44 (17.6%)	94 (37.6%)	46 (18.4%)	44 (17.6%)	16 (6.4%)	2.50	Negative
Only patients relative should be asked to donate blood	24 (9.6%)	29 (11.6%)	25 (10.0%)	120 (48.0%)	46 (18.4%)	3.47	Positive
Blood donation is safe	32 (12.8%)	81 (32.4%)	81 (32.4%)	45 (18.0%)	7 (2.8%)	3.30	Positive
Blood donation makes one lose weight	24 (9.6%)	57 (22.8%)	77 (30.8%)	64 (25.6%)	22 (8.8%)	2.94	Negative
Best way to donate blood is voluntary nonremunerated	80 (32.0%)	87 (34.8%)	58 (23.2%)	10 (4.0%)	11 (4.54%)	3.81	Positive
People who donated blood may become infected because of needle insertion	34 (13.6%)	82 (32.8%)	71 (28.4%)	37 (14.8%)	22 (8.8%)	2.68	Negative
I believe that blood donated is always used for intended purposes	78 (31.2%)	97 (38.8%)	55 (22.0%)	12 (4.8%)	5 (2.0%)	3.89	Positive
Attitude						**3.23**	**Positive**

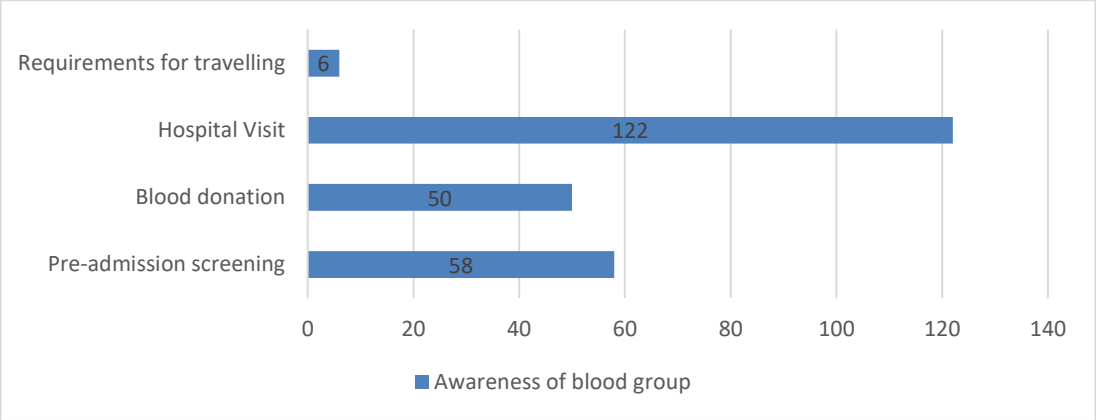

Fig. 2. Reasons the respondents knew their blood group

Table 4. Willingness to donate blood among Ambrose Alli University students

Variable	Frequency (n=250)	Percent (%)
Have donated blood before		
Yes	34	13.6
No	216	86.4
***Reasons for respondents' previous donation (n=34)**		
It is my moral responsibility to humanity	2	5.9
To save lives	23	67.6
To know my HIV status	2	5.9
To get money	1	2.9
No particular reason	6	17.7
***Why haven't you donated blood?**		
I am afraid of needle	25	10.0
My blood type not in demand	16	6.4
I am afraid of contracting disease	28	11.2
I haven't had the opportunity to donate	133	53.2
Willingness to donate blood to someone you do not know if called upon to do so		
Yes	149	59.6
No	101	40.4
Willingness to donate blood if given incentive in cash or kind		
Yes	47	18.8
No	203	81.2
Willingness to donate blood to family members or friends		
Yes	205	82.0
No	45	18.0
Willingness to accept blood donation if need be		
Yes	176	70.4
No	74	29.6
Have you ever donated during a blood donation campaign?		
Yes	16	6.4
No	234	93.6
Have you ever encouraged someone to donate blood?		
Yes	64	25.6
No	186	74.4
Have you ever refused to donate blood when asked?		

Variable	Frequency (n=250)	Percent (%)
Yes	35	14.0
No	215	86.0
Reasons for refusal of blood donation when called upon (n=35)		
Out of fear	6	17.1
It is against my culture and religion	6	17.1
No interest to donate	5	14.3
No time to go for donation	5	14.3
Insufficient information about blood donation	7	20.0
No reason	6	17.1

**multiple responses*

Table 5. Association between respondents' sociodemographics and their practice of blood donation

Variables	Have you donated before		x^2	P value
	Yes n(%)	No n(%)		
Age				
15-20	10 (29.4)	96 (44.4)	8.771	0.120
21-25	16 (47.1)	103 (47.7)		
>25	8 (23.5)	17 (7.9)		
Sex				
Male	24 (70.6)	97 (44.9)	7.757	0.050
Female	10 (29.4)	119 (55.1)		
Marital status				
Single	32 (94.1)	211 (97.7)	1.374	0.241
Married	2 (5.9)	5 (2.1)		
Ethnic group				
Esan	13 (38.2)	108 (50.0)	4.142	0.247
Bini	5 (14.7)	13 (6.0)		
Etsako	3 (8.8)	22 (10.2)		
Others	13 (38.2)	73 (33.8)		
Year of study				
First year	5 (14.7)	50 (23.1)	10.843	0.028*
Second year	10 (29.4)	30 (13.9)		
Third year	5 (14.7)	52 (24.1)		
Fourth year	7 (20.6)	64 (29.6)		
Fifth year	7 (20.6)	20 (9.3)		
faculty				
Law	1 (2.9)	33 (15.3)	28.272	<0.001*
Medical laboratory science	1 (2.9)	35 (16.2)		
Clinical science	13 (38.2)	23 (10.6)		
Engineering	1 (2.9)	35 (16.2)		
Agricultural science	7 (20.6)	29 (13.4)		
Basic medical science	7 (20.6)	29 (13.4)		
Education	4 (11.8)	32 (14.8)		
Religion				
Christianity	34 (100)	204 (94.4)	1.984	0.371
Islam	0 (0.0)	8 (3.7)		
African Traditional religion	0 (0.0)	4 (1.9)		
Employment status of mother or female guardian				
Unemployed	4 (11.8)	25 (11.6)	9.761	0.370
Self-employed	16 (47.1)	107 (49.5)		
Salaried employment	13 (38.2)	79 (36.6)		
Not applicable	1 (2.9)	5 (2.3)		

Variables	Have you donated before		x^2	P value
	Yes n(%)	No n(%)		
Employment status of father or male guardian				
Unemployed	4 (11.8)	41 (19.0)	5.957	0.114
Self-employed	11 (32.4)	101 (46.8)		
Salaried employment	17 (50.0)	65 (30.1)		
Not applicable	2 (5.9)	9 (4.2)		

Table 6. Association between sociodemographic features and knowledge scores of the participants

Variables	Knowledge score of respondents			x^2	P value
	Poor n(%)	Fair n(%)	Good n(%)		
Age					
15-20	25 (44.6)	58 (53.2)	23 (27.1)	15.808	0.003*
21-25	27 (48.2)	44 (40.4)	48 (56.5)		
>25	4 (7.1)	7 (6.4)	14 (16.5)		
Sex					
Male	35 (62.5)	48 (44.0)	38 (44.7)	5.753	0.056
Female	21 (37.5)	61 (56.0)	47 (55.3)		
Marital status					
Single	54 (96.4)	106 (97.2)	83 (97.6)	0.186	0.911
Married	2 (3.6)	3 (2.8)	2 (2.4)		
Ethnic group					
Esan	27 (48.2)	55(50.5)	39 (45.9)	1.947	0.924
Bini	3 (5.4)	8 (7.3)	7 (8.2)		
Etsako	5 (8.9)	9 (8.3)	11(12.9)		
Others	21 (37.5)	37 (33.9)	28 (32.9)		
Year of study					
First year	15 (26.8)	30 (27.5)	10 (11.8)	17.481	0.025*
Second year	10 (17.9)	17 (15.6)	13 (15.3)		
Third year	15 (26.8)	27 (24.8)	15 (17.6)		
Fourth year	12 (21.4)	27 (24.8)	32 (37.6)		
Fifth year	4 (7.1)	8 (7.3)	15 (17.6)		
faculty					
Law	12 (21.4)	16 (14.7)	6 (7.1)	57.977	<0.001*
Medical laboratory science	8 (14.3)	14 (12.8)	14 (16.5)		
Clinical science	3 (5.4)	7 (6.4)	26 (30.6)		
Engineering	9 (16.1)	19 (17.4)	8 (9.4)		
Agricultural science	18 (32.1)	14 (12.8)	4 (4.7)		
Basic medical science	3 (5.4)	20 (18.3)	13 (15.3)		
Education	3 (5.4)	19 (17.4)	14 (16.5)		
Religion					
Christianity	54 (96.4)	102 (93.6)	82 (96.5)	3.055	0.549
Islam	2 (3.6)	5 (4.6)	1 (1.2)		
African Traditional religion	0 (0.0)	2 (1.8)	2 (2.4)		
Employment status of mother or female guardian					
Unemployed	10 (17.9)	14 (12.8)	5 (5.9)	9.097	0.168
Self employed	22 (39.3)	55 (50.5)	46 (54.1)		
Salaried employment	21 (37.5)	39 (35.8)	32 (37.6)		
Not applicable	3 (5.4)	1 (0.9)	2 (2.4)		
Employment status of father or male guardian					
Unemployed	15 (26.8)	20 (18.3)	10 (11.8)	13.541	0.035*
Self employment	19 (33.9)	51(46.8)	42 (49.4)		
Salaried employment	16 (28.6)	36 (33.0)	30 (35.3)		
Not applicable	6 (10.7)	2 (1.8)	3 (3.5)		

Table 7. Binary logistic regression of the determinants of voluntary blood donation

Variable	OR	95% CI		P value
		Lower	Upper	
Year of Study				
First year	1			
Second year	0.23	0.05	1.08	0.062
Third year	1.14	0.27	4.81	0.861
Fourth year	0.20	0.05	0.87	0.032*
Fifth year	0.23	0.06	0.93	0.039*
Faculty				
Law	1			
Medical laboratory science	0.14	0.01	1.56	0.106
Clinical science	0.11	0.01	1.13	0.063
Engineering	3.08	0.80	11.91	0.103
Agricultural science	0.13	0.01	1.34	0.087
Basic medical science	1.47	0.36	6.06	0.597
Education	1.68	0.41	6.89	0.472

As shown in Table 7, the binary logistic regression analysis of the determinants of voluntary blood donation revealed significant findings related to the year of study of the participants. Specifically, students in their fourth and fifth years are significantly less likely to donate blood than first-year students are. No significant associations were found between faculty and blood donation compared with law students.

4. DISCUSSION

The current study assessed the knowledge, attitudes and practices of Ambrose Alli University students towards blood donations. The main purpose of this study was to identify approaches and issues that influence the recruitment and retention of voluntary nonremunerated blood donors to achieve 100% voluntary blood donation.

Knowledge of blood donation among students was measured by using questions that included respondents' understanding of the risk of blood donation to donors, how they learn about blood donation and the conditions that can be transmitted through blood donation. The majority of the respondents (43.6%) had fair knowledge about blood donation; 48.8% (122) knew about their blood group during hospital visits, and only 28.4% (71) knew the minimum gap between two donations, which is contrary to the findings of a study conducted in Gondar town, Northwest Ethiopia, where 56.8% had adequate knowledge about blood donation, probably due to different geographical locations. However, a similar study conducted in 2016 among residents of Ekpoma revealed that the residents had good knowledge of blood donation [13]. A study conducted among university students in Kilimanjaro, Tanzania, revealed that 85.3% of the respondents had adequate knowledge about blood donation [15]. Another study conducted among university workers in Benin teaching hospitals reported that 92.6% of the respondents expressed good knowledge [11]. This percentage is contrary to the percentage that showed good knowledge in this study; the disparity may be because it was conducted among hospital workers.

In this study, the majority of the respondents had positive attitudes towards blood donation. This study agrees with a study performed at the University of Gordar, Ethiopia, where 86.7% of the respondents had positive attitudes towards blood donation [8]. This also agreed with studies conducted in Calabar and Benin [11,29]. According to a study conducted at the University of Benin Teaching Hospital among workers, 72.2% of the respondents agreed that voluntary blood donation is the best source of blood, whereas 66.8% of the participants in this study indicated the same [11]. However, more than half of the respondents (55.2%) felt that something harmful can h during blood donation. Although the majority of the respondents had positive attitudes, more positive steps should be taken to educate the population about blood donation [11].

With respect to the sharing of the blood donation experience, only approximately 13.6% of the respondents are blood donors at the moment, which is far less than expected in a student environment. A similar study conducted in 2016

in the same community revealed that only 8.5% were donors [13]. This result agrees with a study carried out among health science students in South India, where the majority of the respondents (62%) never donated blood before despite schooling in a teaching hospital where blood is needed to save lives [21]. In this research, 53.2% (133) of the respondents who had not donated blood previously indicated that they did not donate because they had no opportunity to do so. When asked if they would donate when called upon, 59.6% (149) indicated that they would donate. However, 18.8% (47) agreed that they would donate if given incentives in cash or kind. Eighty-two percent (205) agreed that they would donate blood to family members, whereas 70.4% (176) agreed that they would accept blood transfusions if needed. With respect to donations during campaigns, 86% (215) indicated that they never donated during a campaign, which shows that more positive steps must be taken to create awareness among the population about blood donation. Fourteen percent (35) refused to donate blood before, for several reasons, including fear, cultural and religious background and insufficient information during blood donation. The 13.6% prevalence of blood donation is lower than expected, but this indicates the prevalence of blood donation in Nigeria. In 2011, only 57,652 donations were reported; 43,006 donations were reported in 2012; 125,101 blood donations were reported in 2013; and only 53,764 were voluntary nonremunerated donors. A total of 40,540 were voluntary nonremunerated donations from first-time donors [2]. Only 13,224 were voluntary nonremunerated blood donations from repeated donors [2]. This finding shows that much work needs to be done to obtain more donors into the donor pool, which can be accomplished by creating awareness, especially among tertiary institution students, and mitigating their fears and myths about blood donation.

4.1 Factors Associated with the Practice of Blood Donation

The relationship between the year of study of the respondents and their willingness to donate blood was statistically significant ($p < 0.028$). Other factors affecting blood donation are the faculty of the respondents ($p<0.001$), whereas age, year of study, faculty of the respondents and employment status of the father or male guardian are associated with knowledge of blood donation among the students because the p values are less than 0.05. Specifically, students in their fourth and fifth years are significantly less likely to donate blood than first-year students are. Fourth-year students had an odds ratio (OR) of 0.20 (95% CI: 0.05–0.87, P = 0.032), and fifth-year students had an OR of 0.23 (95% CI: 0.06–0.93, P = 0.039). These findings indicate a significant decline in the likelihood of blood donation among senior students compared with those in their first year. No significant associations were found between faculty and blood donation compared with law students. A study conducted among undergraduate students at Ebonyi State University linked socioeconomic group and educational status of the students to blood donation; students in the low socioeconomic group were three times less likely to donate blood than those in the high socioeconomic group were [25].

5. CONCLUSION

The general knowledge of blood donation among the respondents was satisfactory but not significantly good and above 50%. The present study revealed that a lack of awareness of blood donation was present even among university students. Hence, an intermittent awareness program on blood donation must be started in various educational institutions to achieve 100% voluntary nonremunerated blood donation. The current study revealed that the majority of the participants never donated blood despite their perceived positive attitudes. The reasons for nondonation were a lack of information on blood donation, cultural and religious background, and negative attitudes, such as blood donation, resulting in weight loss, fear, and other multiple reasons. Nondonors with positive attitudes should be motivated, and awareness of voluntary blood donation should be provided to promote blood donation on a voluntary basis, whereas nondonors with negative attitudes need to be educated about the importance and health benefits of blood donation. Their doubts regarding blood donation should be clarified, and they should be motivated to donate blood on a regular basis. Delivery of adequate knowledge, awareness, communication materials and advertisements to address the fear factor may strengthen the recruitment and retention of voluntary blood donors to donate blood on a regular basis to achieve 100% blood donation only on a voluntary basis. The necessary steps to involve students and create opportunities for them to donate blood are vital if we need to improve the voluntary collection of blood from them. Studies need to be carried out in all states

across the country to walk towards 100% voluntary nonremunerated blood donation in Nigeria.

6. RECOMMENDATIONS

To promote voluntary nonremunerated blood donation, it is crucial to build a positive and progressive image of the donor in the public and develop blood donation as an act of charity. Therefore, good public relations, which involves the use of different media, is crucial for promoting blood donor retention and recruitment by providing information on blood donation and its positive effects on human health. Community participation and involvement, especially in blood donation, can be encouraged with different methods and techniques by the government and private sector, with different awareness programmes, public honour to active donors and genuine thanks to and offerings by society and the government.

Making donors feel that their blood donations are useful for saving lives is important. Not all first-time donors are repeated donors, so it is certainly essential to focus donor retention policies on the conversion of the first timer donor into repeated ones.

Each population has different knowledge, beliefs and practices, so it is necessary to determine what the general population and donors know. Further research should focus on the knowledge, attitudes and practices of blood donation among the general population, which would enable the identification of proper knowledge, attitudes and practices of blood donation in society. The current study provides important information regarding proper knowledge, attitudes and practices related to blood donation and the aim of 100% voluntary nonremunerated blood donation as soon as possible.

7. LIMITATIONS OF STUDY

1. Responses regarding knowledge, attitudes and practices of volunatary blood donation might be affected by social desirability, leading to participants to provide answers they believe are expected rather than their true beliefs or behaviours
2. The findings might not be applicable to universities in different regions with varying cultures and healthcare systems

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

AVAILABILITY OF DATA AND MATERIALS

The data presented in this study are available upon request from the corresponding author.

CONSENT

Informed Written consent was secured from the students, who were assured of confidentiality and had the option to withdraw from the study at any time.

ETHICAL APPROVAL

Ethical approval was obtained from the ethics and research committee of Irrua Specialist Teaching Hospital, Edo State, Nigeria.This study was performed in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethical Review Board at Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/122056