

RESEARCH ARTICLE

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Barriers and facilitators to voluntary blood donation in Enugu: An assessment of adult donor behavior

Onyinye Eze, Chiesonu Dymphna Nzeduba, Chilota Efobi

ABSTRACT

Aims: The aim of this study is to explore the knowledge, attitude, and practice of adults in Enugu metropolis toward voluntary blood donation (VBD).

Methods: Multilevel random sampling was used to select areas and participants, data were collected through a close-ended, interviewer-administered questionnaire that assessed participants' knowledge, attitudes, and practices (KAP) related to VBD. Data were analyzed using IBM SPSS version 23 (IBM Corp., Armonk, NY, USA).

Results: Findings indicate that 93.6% (n=233) of respondents were aware of blood donation, with primary sources of this knowledge being television (32.2%, n=75) and friends (21.9%, n=51), while 6.4% (n=16) were not. Findings also reveal that 70.8% (n=165) of respondents view blood donation positively, while 9.9% (n=23) perceive it negatively, 19.3% (n=45) remain neutral. Substantial majority, 76.3% (n=190), were willing to donate blood if requested, while 23.7% (n=59) expressed unwillingness to donate, with various reasons cited for this reluctance, 29.6% (n=59) perceived contacting infection as a harmful effect of voluntary blood donation. 37.3% (n=93) of respondents have previously donated blood, while 62.7% (n=156) have not.

Conclusion: This study demonstrates a high level of awareness and specific beliefs about blood donation eligibility and safety, with considerable portion holding concerns about infection risk. There is predominantly a positive attitude toward voluntary blood donation, and while majority display willingness to donate blood, a notable subset remains hesitant due to personal, psychological, and religious concerns. These insights suggest a need for targeted educational and outreach efforts to address fears and misconceptions, as well as to provide reassurance regarding the safety and benefits of blood donation.

Keywords: Behavior, Blood donation, Enugu, Voluntary

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INTRODUCTION

Blood transfusion plays significant role in medical practice especially for replacement of lost blood due to injury, surgery, or certain medical conditions and treating various blood disorders. Human blood has no substitute and cannot be artificially produced, making voluntary blood donation essential to meet medical demands [1]. The process of blood donation involves willingly giving one's blood for transfusion to another individual for therapeutic purposes [2]. Safe transfusion practices start with the selection of appropriate donors, as all blood components and products come from human donors. Donors are typically classified as voluntary (non-

remunerated), replacement, remunerated (paid), or autologous (self-donors).

Voluntary donors, who donate blood out of a sense of charity or civic duty, represent the safest category of blood donors. Compared to paid or replacement donors, voluntary donors have a lower risk of transmitting infections because they are more likely to disclose high-risk behaviors and donate blood regularly. The World Health Organization (WHO) has set a global goal of achieving 100% voluntary, non-remunerated blood donation due to its superior safety profile [2]. WHO also recommends that 1% of a given population must donate to satisfy a country's most basic blood needs. Despite this, many developing countries struggle to meet this target, with less than 1% of the population donating blood in some regions. This presents a significant public health concern, as voluntary blood donation remains essential for maintaining a safe and adequate blood supply.

In Nigeria, the challenge of securing sufficient voluntary blood donations is particularly pronounced [3]. Although half of the population is eligible to donate blood, less than four in a thousand people donate voluntarily. Voluntary, non-remunerated donations account for only 10% of total blood donations, while 30% come from family replacement donors and 60% from paid donors [4]. This trend runs contrary to global best practices, which emphasize the importance of voluntary donations in ensuring a safe blood supply. Nigeria's population of over 150 million requires approximately 1.5 million units of blood annually, but far less is collected, resulting in preventable deaths and morbidity, especially among women experiencing obstetric complications and victims of road traffic accidents [5].

Given these challenges, understanding the factors that influence voluntary blood donation is crucial to improving donation rates. Various social, cultural, and religious beliefs contribute to the low rate of voluntary blood donation in Nigeria [6, 7]. For instance, cultural views surrounding blood often prevent individuals from donating to strangers, as blood is perceived to symbolize familial ties. Additionally, misconceptions about the use of donated blood for witchcraft or trade further reduce participation. Religious beliefs also play a role, as some groups view blood donation as sacred and unacceptable. These attitudes, combined with myths and the fear of knowing their HIV status subsequent to the screening of donated blood for infectious diseases associated with blood donation, hinder the willingness of potential donors to participate [8].

This research aims to investigate the knowledge, attitudes, and practices of voluntary blood donation among adults in Enugu metropolis. By assessing the level of awareness, beliefs, and willingness to donate blood, the study seeks to identify barriers and enablers for voluntary blood donation. The findings could inform strategies for donor recruitment and retention, ultimately contributing to a more reliable and safe blood supply in Enugu. Previous studies have primarily focused on

specific groups such as students and healthcare workers, leaving a gap in research concerning the general adult population in Enugu [9–11]. Understanding the factors that influence adults' decisions about blood donation is essential for closing the gap between the demand for and availability of blood in this region.

AIMS AND OBJECTIVES

Aim:

The aim of this study is to explore the knowledge, attitude, and practice of adults in Enugu metropolis toward voluntary blood donation.

Objectives:

- To determine the level of knowledge and perception regarding voluntary blood donation among adults in Enugu metropolis.
- To assess the attitudes and practice of adults in Enugu metropolis toward voluntary blood donation.

Research questions:

- Does the persons living in Enugu metropolis know about blood donation and how do they feel about it?
- Do the residents of Enugu metropolis practice blood donation, if not, then why?

MATERIALS AND METHODS

This cross-sectional study was conducted to examine the knowledge, attitude, and practices regarding voluntary blood donation among adults residing in selected communities within Enugu North Local Government Area (LGA), one of the metropolitan LGAs in Enugu State, South East Nigeria. Enugu State is geographically situated between latitudes 5° 56' N and 7° 00' N, and longitudes 7° 00' E and 7° 55' E. It is bounded by several other states, including Ebonyi, Benue, Kogi, Anambra, and Abia [4].

The study was designed by a team from the Enugu State University Teaching Hospital. The study data were collected from July 2015 to November 2015 in Enugu South Local Government Area of Enugu State.

Study design

A multistage sampling method was employed to select one LGA out of the 17 in Enugu State. Simple random sampling by balloting was used to choose three communities within the LGA, followed by systematic random sampling to select participants from these communities.

Sample size was determined using Leslie Fischer's formula for the calculation of sample size

$$N = Z^2Pq/d^2$$

where N is the desired sample size; Z is the standard normal deviate, usually set at 1.96; P is the proportion in the target having the particular trait. 82%, i.e., 0.82 which is the prevalence of positive attitude toward voluntary blood donation; q is $(1.0-P)$; d is the degree of accuracy desired usually set at 0.05=5%.

Thus, $N = (1.96)^2(0.82)(0.18)/(0.05)^2 = 226.8$, approximately 227.

The sample size was initially estimated at 227 but increased to 250 to account for potential non-responses. Data were collected through a closed-ended, interviewer-administered questionnaire that assessed participants' knowledge, attitudes, and practices (KAP) related to voluntary blood donation.

Study population

The target population comprised community members from Coal Camp, Uwani, and Obiagu. Individuals aged between 18 and 60 years, weighing 50 kg or more, and who provided verbal consent were included in the study, while pregnant women, individuals younger than 18 or older than 60 years, those weighing less than 50 kg, and non-consenting individuals were excluded. Study participants were all promised anonymity and proof of age was taken by word of mouth.

Data analysis

Data were analyzed by the IBM SPSS version 23 (IBM Corp., Armonk, NY, USA). Qualitative data expressed as number and percentage and quantitative data were expressed as mean and standard deviation. A suitable statistical test was used accordingly. A $p < 0.05$ was considered significant. Results were presented in tables and qualitative data expressed as means, frequencies, and percentages. Test of association was undertaken between independent variables.

RESULTS

Socio-demographic characteristics of respondents

Table 1 presents a comprehensive overview of the socio-demographic characteristics of the respondents ($N=249$). Majority (59%) of the respondents are female ($n=147$), with males constituting 41% ($n=102$). The predominant age group is 21–40 years, accounting for 53% of the respondents ($n=132$). A very small percentage (0.4%, $n=1$) falls into the above 60 age category, suggesting that the sample primarily comprises younger individuals.

Regarding marital status, most respondents are single (59.8%, $n=149$), while 35.3% ($n=88$) are married. A smaller portion of the respondents are widowed (4%, $n=10$) or separated (0.8%, $n=2$), indicating a predominantly unmarried demographic.

Table 1: Socio-demographic characteristics of respondents, $N=249$

Variable	Measurements	F (%)
Gender	Male	102 (41.0)
	Female	147 (59.0)
Age category	<20	58 (23.3)
	21–40	132 (53.0)
	41–60	58 (23.3)
	>60	1 (0.4)
Marital status	Married	88 (35.3)
	Single	149 (59.8)
	Widow	10 (4.0)
	Separated	2 (0.8)
Does the respondent have formal education?	Yes	239 (96.0)
	No	10 (4.0)
Educational status	Primary	34 (13.7)
	Secondary	94 (37.8)
	Tertiary	107 (43.0)
	Other	4 (1.6)
Occupation	Unemployed	28 (11.2)
	Student	91 (36.5)
	Civil servant	10 (4.0)
	Trader	29 (11.6)
	Artisan	77 (30.9)
	Farmer	12 (4.8)
	Others	2 (0.8)

Nearly all respondents (96%, $n=239$) have received formal education, with 43% ($n=107$) holding a tertiary degree, 37.8% ($n=94$) having a secondary education, and 13.7% ($n=34$) completing primary education. Only a small fraction (1.6%, $n=4$) reported having an “Other” level of education, underscoring that the sample is largely educated, with the majority attaining tertiary-level qualifications.

36.5% ($n=91$) of the respondents are students, making it the largest occupational category, followed by artisans (30.9%, $n=77$). Smaller portions are represented by traders (11.6%, $n=29$), unemployed individuals (11.2%, $n=28$), civil servants (4%, $n=10$), farmers (4.8%, $n=12$), and a very small number in “Other” occupations (0.8%, $n=2$). This occupational distribution indicates a predominantly young, educated population, many of whom are still pursuing studies or working in trades.

Respondents knowledge of voluntary blood donation

Table 2 shows respondents' knowledge and perceptions regarding voluntary blood donation ($N=249$). Our findings indicate that 93.6% ($n=233$) of respondents are aware of blood donation, with primary sources of this knowledge being television (32.2%, $n=75$) and friends (21.9%, $n=51$). Additionally, 85.5% ($n=213$) of respondents are familiar with common blood groups, and 88% ($n=219$) are aware of their own blood type. This is suggestive of a high level of general knowledge

Table 2: Respondents knowledge of voluntary blood donation, n=249

Variable	Measurements	F (%)
Knowledge about voluntary blood donation	Yes	233 (93.6)
	No	16 (6.4)
Sources of knowledge on blood donation.	Television	75 (32.2)
	Internet	31 (13.3)
	Newspaper	28 (12.0)
	Friends	51 (21.9)
	Others	48 (19.3)
Respondents knowledge of common blood groups	Yes	213 (85.5)
	No	36 (14.5)
Respondents knowledge of their blood group	Yes	219 (88.0)
	No	30 (12.0)
Respondents stated blood group	A(+ve)	77 (35.2)
	A(-ve)	29 (13.2)
	B(+ve)	16 (7.3)
	B(-ve)	5 (2.0)
	AB(+ve)	17 (6.8)
	AB(-ve)	24 (9.6)
	O(+ve)	42 (19.2)
	O(-ve)	9 (3.6)
Respondents knowledge on frequency of donation.	Weekly	30 (12.9)
	Monthly	21 (8.4)
	3 Monthly	42 (18.0)
	6 Monthly	38 (16.3)
	Yearly	24 (10.3)
	Don't know	78 (31.3)
Persons eligible to donate blood	Men	51 (21.9)
	Women	10 (4.0)
	Young	27 (10.8)
	Less than 18 years	3 (1.3)
	Old greater than 60 years	11 (4.4)
	Healthy 18–59 years	128 (54.9)
	Diseased	3 (1.3)
Persons not eligible to donate blood	Men	15 (6.0)
	Women	20 (8.0)
	Young less than 18 years	92 (36.9)
	Old greater than 60 years	10 (4.0)
	Healthy 18–59 years	11 (4.4)
	Diseased	84 (36.1)
Whether one can be infected through blood donation	Yes	222 (89.2)
	No	27 (10.8)
Knowledge of diseases that can be transmitted through blood donation	HIV	193 (90.2)
	Hepatitis	53 (29.0)
	Syphilis	25 (14.0)
	Malaria	16 (9.2)
Sources of blood donation	Voluntary	145 (58.2)
	Donor	
	replacement	32 (16.2)
	Donation for money/ incentives	51 (25.8)
	Self-donor	35 (17.7)
	Don't know	36 (18.7)

healthy individuals aged 18 to 59 are suitable donors. Meanwhile, 36.9% (n=92) believe that individuals younger than 18 are ineligible, and 36.1% (n=84) consider individuals with certain diseases as ineligible.

89.2% (n=222) of respondents perceive a risk of infection through blood donation, while 90.2% (n=193) identify human immunodeficiency virus (HIV) as a transfusion transmissible disease. Hepatitis (29%, n=53), syphilis (14%, n=25), and malaria (9.2%, n=16) were also seen by respondents as potential risks.

The respondents were aware of various types of blood donation, with 58.2% (n=145) identifying voluntary donation as the main source. Replacement donations were mentioned by 16.2% (n=32), and 25.8% (n=51) acknowledged donations motivated by financial incentives.

These findings demonstrate a high level of awareness and specific beliefs about blood donation eligibility and safety, with a considerable portion holding concerns about infection risk. These perceptions provide insight into the respondents' understanding and attitudes toward blood donation, highlighting areas that may benefit from educational interventions to address misconceptions and promote safe donation practices.

Respondent perception of voluntary blood donation

Table 3 shows respondents' perceptions of voluntary blood donation (N=249). Findings reveal that 70.8% (n=165) of respondents view blood donation positively, indicating a general perception of blood donation as a beneficial practice. Conversely, 9.9% (n=23) perceive it negatively, while 19.3% (n=45) remain neutral.

Table 3: Respondent perception of voluntary blood donation, n=249

Variable	Measurements	F (%)
Perception about voluntary blood donation	Good	165 (70.8)
	Bad	23 (9.9)
	Neutral	45 (19.3)
Perceived best source of blood donation	Voluntary donor	146 (62.7)
	Paid donor	21 (9.0)
	Replacement donor	13 (5.6)
	Self-donor	17 (7.3)
	Don't know	25 (10.7)
	No response	11 (4.7)
Whether could result from blood donation	Yes	213 (91.4)
	No	20 (8.6)
Perceived harm from blood donation	Contact infection	59 (29.6)
	Body weakness	101 (51.5)
	Dizziness	67 (35.4)
	Fall sick	27 (14.8)
Whether patient relative can donate blood	Yes	185 (74.3)
	No	52 (20.9)
	Don't know	12 (4.8)

When asked about the ideal sources of blood donation, the majority (62.7%, n=146) preferred voluntary donations, followed by a smaller fraction who favored paid donors (9%, n=21), self-donors (7.3%, n=17), and replacement donors (5.6%, n=13). A small portion of respondents (10.7%, n=25) were uncertain, while 4.7% (n=11) gave no response. This distribution indicates strong support for voluntary blood donation as the most ethical and effective approach.

Concerning potential risks associated with blood donation, 91.4% (n=213) believe that harm could result from the process. Commonly cited harms include body weakness (51.5%, n=101), dizziness (35.4%, n=67), infection (29.6%, n=59), and general illness (14.8%, n=27). These perceptions suggest a prevalent concern regarding the safety of blood donation, potentially affecting donation rates and necessitating educational efforts to address misconceptions.

Furthermore, 74.3% (n=185) of respondents agree that a patient's relative can donate blood on their behalf, reflecting a positive view of family-based donation as a supportive act during medical emergencies. A smaller proportion (20.9%, n=52) opposed this, while 4.8% (n=12) were unsure. These findings show a predominantly positive attitude toward voluntary blood donation, alongside significant concerns about its safety. The strong preference for voluntary over paid or replacement donations and support for relative-to-patient donations highlight respondents' ethical and familial values regarding blood donation, although concerns over potential harm indicate areas where further public health education may be beneficial.

Respondent's attitude toward voluntary blood donation

Table 4 shows the attitudes of respondents toward voluntary blood donation (N=249). Our findings indicate that a substantial majority, 76.3% (n=190), are willing to donate blood if requested, suggesting a generally positive attitude toward blood donation among the respondents. However, 23.7% (n=59) expressed unwillingness to donate, with various reasons cited for this reluctance.

Table 4: Respondent's attitude toward voluntary blood donation, n=249

Variable	Measurements	F (%)
Respondents willingness to donate blood voluntarily	Yes	190 (76.3)
	No	59 (23.7)
Reason for not willing to donate blood voluntarily	Fear of needle	17 (28.8)
	Don't want to	18 (30.5)
	Fear of contacting disease	9 (3.6)
	Religion forbids it	10 (16.9)
	Medically unfit	5 (8.5)

Among those unwilling to donate, the most frequently mentioned reason was a simple lack of desire to participate (30.5%, n=18). Fear of needles was another prominent factor, affecting 28.8% (n=17) of those unwilling, highlighting a common psychological barrier to donation. Religious beliefs also played a role, with 16.9% (n=10) indicating that their religion discourages or prohibits blood donation. Additional reasons included concerns over possible disease transmission (3.6%, n=9) and being medically unfit for donation (8.5%, n=5).

In summary, while the majority of respondents display a willingness to donate blood, a notable subset remains hesitant due to personal, psychological, and religious concerns. These insights suggest a need for targeted educational and outreach efforts to address fears and misconceptions, as well as to provide reassurance regarding the safety and benefits of blood donation.

Respondents practice of voluntary blood donation

Table 5 gives an overview of respondents' practices and experiences with voluntary blood donation (N=249). Our findings show that 37.3% (n=93) of respondents have previously donated blood, while 62.7% (n=156) have not.

For those who have not donated, the most commonly cited reason was the absence of friends or relatives in need (47.4%, n=74), suggesting a lack of motivation or external prompt to donate. Fear of needles was another prominent factor (27.8%, n=40), highlighting a psychological barrier to donation. Other reasons included medical unsuitability (7.1%, n=10), not being approached to donate (15.2%, n=21), and, in smaller proportions, concerns about religion (5%, n=7), a lack of incentives (2.8%, n=4), and fear of status disclosure (2.1%, n=3).

Table 5: Respondents practice of voluntary blood donation, n=249

Variable	Measurements	F (%)
Whether respondent have donated blood voluntarily before	Yes	93 (37.3)
	No	156 (62.7)
Reason why respondent have not donated blood voluntarily	No relation/friends to donate for	74 (47.4)
	Medically unfit	10 (7.1)
	Fear of needles	40 (27.8)
	Donated blood may be sold	4 (2.8)
	Fear of knowing status	3 (2.1)
	No payment/incentives	4 (2.8)
	Not approached to donate	21 (15.2)
	Religion forbids it	7 (5.0)
	Others	14 (9.9)
Pattern of voluntary blood donation	<1 time a year	50 (53.8)
	1–3 times a year	20 (21.5)
	>3 times a year	8 (8.6)
	>1 year	15 (16.1)

Table 5: (Continued)

Reasons for donating blood	For friend/relative	63 (46.7)
	For money/incentives	14 (10.9)
	Voluntary	59 (41.8)
	To know my status	14 (10.9)
Whether respondent encourage friend/relatives to go for voluntary blood donation	Organization activity/campaign	7 (5.5)
	Yes	186 (74.7)
	No	63 (25.3)
Facility where respondents donate blood	Government hospitals	48 (51.6)
	Private hospitals	20 (21.5)
	Private laboratories	12 (12.9)
	Organizations	13 (14.0)

Among those who had donated blood, the frequency varied: 53.8% (n=50) reported donating less than once per year, 21.5% (n=20) donated between 1 and 3 times per year, while 8.6% (n=8) donated more than three times annually. Most respondents indicated they donated blood either for friends or relatives (46.7%, n=63) or on a voluntary basis (41.8%, n=59). Smaller numbers donated for incentives (10.9%, n=14) or as part of an organizational activity or campaign (5.5%, n=7).

74.7% (n=186) of respondents stated that they encourage friends and family to donate, showing a degree of advocacy within the community. In terms of donation locations, government hospitals were the primary venue (51.6%, n=48), followed by private hospitals (21.5%, n=20), private laboratories (12.9%, n=12), and organizations (14%, n=13).

In conclusion, while a significant portion of respondents have not participated in voluntary blood donation, primarily due to lack of a perceived need, fear, or a lack of invitation, those who do donate often do so out of personal connections or altruism. The high rate of encouragement toward blood donation within social circles suggests a supportive attitude toward donation, despite existing barriers. Efforts to address psychological concerns and increase proactive outreach could help boost participation rates in voluntary blood donation.

Relationship between socio-demographic variables and knowledge of voluntary blood donation

Table 6 presents a bivariate analysis examining the relationship between respondent's socio-demographic characteristics and their knowledge of voluntary blood donation (N=233). The findings reveal statistically significant associations between knowledge of blood donation and specific demographic variables, including gender, age, and educational status.

Gender was significantly associated with knowledge of blood donation ($X^2=5.728$, $p=0.017$), with males

Table 6: Relationship between socio-demographic variables and knowledge of voluntary blood donation, N=233

Variable	Measurements	Knowledge of blood donation	
		F (%)	X ² (p-value)
Gender	Male	133 (57.1)	5.728 (0.017)
	Female	100 (42.9)	
Age category	<20	48 (20.6)	14.739 (0.002)
	21–40	128 (54.9)	
	41–60	56 (24.0)	
	>60	1 (0.4)	
Marital status	Married	85 (36.5)	2.338 (0.505)
	Single	137 (58.8)	
	Widow	9 (3.9)	
	Separated	2 (0.9)	
Whether respondent went to school	Yes	228 (97.9)	32.899 (0.000)
	No	5 (2.1)	
Occupation	Unemployment	26 (11.2)	4.922 (0.554)
	Student	82 (35.2)	
	Civil servant	10 (4.3)	
	Trader	29 (12.4)	
	Artisan	73 (31.3)	
	Farmer	11 (4.7)	
	Others	2 (0.9)	

demonstrating higher knowledge levels (57.1%) compared to females (42.9%). This finding suggests that males may have greater exposure to information about blood donation or more involvement in related educational activities.

Age category was also significantly associated with knowledge of blood donation ($X^2=14.739$, $p=0.002$). The majority of knowledgeable respondents were in the 21–40 age group (54.9%), followed by those aged 41–60 (24.0%) and under 20 (20.6%), with minimal knowledge reported among respondents over 60 (0.4%). This distribution implies that young to middle-aged adults may have more access to or interest in blood donation information than older adults.

Educational status showed a highly significant association with blood donation knowledge ($X^2=32.899$, $p<0.001$). Almost all knowledgeable respondents had attended school (97.9%), with a very small proportion lacking formal education (2.1%). This strong association highlights the critical role of education in fostering awareness and understanding of blood donation, possibly due to increased health literacy among educated individuals. In contrast, no statistically significant associations were found between knowledge of blood donation and marital status ($X^2=2.338$, $p=0.505$) or occupation ($X^2=4.922$, $p=0.554$). These findings suggest that marital status and occupation may not substantially influence blood donation knowledge in this population.

In summary, gender, age, and educational status are significant factors related to knowledge of blood donation, underscoring the importance of targeting educational

efforts to specific demographic groups. Education, in particular, emerges as a critical factor, indicating that increasing educational outreach could enhance blood donation knowledge across various population segments.

Relationship between socio-demographic variables and attitude of respondents toward voluntary blood donation

Table 7 presents the relationship between various socio-demographic variables and respondents' attitudes toward voluntary blood donation, specifically their willingness to donate blood. Among the examined socio-demographic factors—gender, age category, marital status, educational background, and occupation—only educational background demonstrated a statistically significant association with respondents' willingness to donate blood ($p=0.046$). This finding suggests that individuals who had attended school were more inclined to consider voluntary blood donation than those who had not. The higher levels of awareness, exposure to health-related knowledge, and understanding of the importance of blood donation associated with formal education may contribute to this greater willingness.

Table 7: Relationship between socio-demographic variables and attitude of respondents towards voluntary blood donation, N=190

Variable	Measurements	Willingness of respondents to donate blood voluntarily	
		F (%)	X ² (p-value)
Gender	Male	112 (58.9)	0.003 (0.939)
	Female	78 (41.1)	
Age category	<20	40 (21.1)	5.883 (0.117)
	21–40	103 (54.2)	
	41–60	47 (24.7)	
	>60	–	
Marital status	Married	74 (38.9)	6.246 (0.100)
	Single	108 (56.8)	
	Widow	6 (3.2)	
	Separated	2 (1.1)	
Whether respondent went to school	Yes	185 (97)	3.987 (0.046)
	No	5 (2.6)	
Occupation	Unemployment	25 (13.2)	9.807 (0.133)
	Student	67 (35.3)	
	Civil servant	9 (4.7)	
	Trader	25 (13.2)	
	Artisan	52 (27.4)	
	Farmer	10 (5.3)	
	Others	2 (1.1)	

Conversely, no statistically significant associations were observed for the other variables examined. Gender did not show a significant relationship with willingness to donate ($p=0.939$), indicating that male and female respondents exhibited similar attitudes toward voluntary blood donation. Age category also lacked a statistically significant association ($p=0.117$), suggesting that age was not a determining factor in respondents' willingness to donate blood within this sample. Similarly, marital status ($p=0.100$) and occupation ($p=0.133$) showed no significant relationships with donation attitudes. This may indicate that personal factors such as relationship status and employment type do not strongly influence willingness to donate blood, though they could impact the practical ability or frequency of donation.

The finding that educational background is a significant factor aligns with existing literature, which has consistently highlighted the influence of education on health behaviors, including blood donation. Similarly, studies by Agbovi et al. and Olubiyi et al. [12, 13] found that educated individuals are more likely to recognize the importance of blood donation and exhibit positive attitudes toward it. This relationship emphasizes the role of education as a critical component in shaping health behaviors and may guide future interventions aimed at increasing blood donation rates, particularly by focusing on raising awareness and dispelling misconceptions among less-educated populations.

Relationship between socio-demographic variables and practice of voluntary blood donation

Table 8 presents the results of a bivariate analysis examining the relationship between socio-demographic variables and the practice of voluntary blood donation among respondents (N=93). The findings indicate statistically significant associations between practice of voluntary blood donation and gender, age, and occupation ($p<0.05$).

In terms of gender, male respondents were significantly more likely to have donated blood voluntarily, with 67.7% of donors being male compared to 32.3% female ($X^2=4.652$, $p=0.031$). This suggests that men in the study population may be more inclined toward engaging in blood donation practices, possibly due to cultural, physiological, or social factors.

Age was also significantly associated with prior blood donation, with the majority of previous donors falling within the 21–40 age category (55.9%), followed by 30.1% in the 41–60 age group, and 14.0% among those under 20 ($X^2=9.320$, $p=0.025$). This trend suggests that individuals in early to middle adulthood are more likely to donate blood, possibly due to greater physical health, awareness, or a heightened sense of civic responsibility within these age groups.

Occupation showed a significant relationship with blood donation practice ($X^2=21.724$, $p=0.001$). The

Table 8: Relationship between socio-demographic variables and practice of voluntary blood donation, N=93

Variable	Measurements	Whether respondent have donated blood voluntarily before	
		F (%)	X ² (p-value)
Gender	Male	63 (67.7)	4.652 (0.031)
	Female	30 (32.3)	
Age category	<20	13 (14.0)	9.320 (0.025)
	21–40	52 (55.9)	
	41–60	28 (30.1)	
	>60	–	
Marital status	Married	41 (44.1)	6.704 (0.082)
	Single	46 (49.5)	
	Widow	5 (5.4)	
	Separated	1 (1.1)	
Whether respondent went to school	Yes	91 (97.8)	1.340 (0.247)
	No	2 (2.2)	
Occupation	Unemployment	18 (19.4)	21.724 (0.001)
	Student	22 (23.7)	
	Civil servant	4 (4.3)	
	Trader	17 (18.3)	
	Artisan	26 (28.0)	
	Farmer	5 (5.4)	
	Others	1 (1.1)	

highest percentages of voluntary donors were found among artisans (28.0%), students (23.7%), and the unemployed (19.4%), indicating that individuals in specific employment categories or those with flexible schedules may have a greater likelihood or availability to participate in blood donation activities.

However, no statistically significant association was found between blood donation practice and educational background ($X^2=1.340$, $p=0.247$). Although 97.8% of previous donors had received formal education, this finding suggests that schooling alone may not necessarily drive blood donation practice, highlighting the importance of other demographic or psychosocial factors.

In summary, the analysis suggests that gender, age, and occupation significantly influence the likelihood of voluntary blood donation, while educational background does not appear to play a critical role in this practice. These findings underscore the need to consider demographic factors in developing targeted strategies to encourage blood donation within specific population segments.

Relationship between respondent's knowledge with attitude and practice of voluntary blood donation

Table 9 illustrates the relationship between respondents' knowledge of blood donation and their attitudes (willingness to donate) and practices (prior donation history) concerning voluntary blood donation.

The analysis shows a statistically significant association between knowledge of blood donation and actual prior donation practice ($X^2=6.544$, $p=0.011$). Specifically, individuals with greater knowledge about blood donation were significantly more likely to have previously donated blood. This finding implies that awareness and understanding of blood donation are likely influential factors in motivating individuals to engage in donation practices. It highlights the critical role of educational initiatives and awareness campaigns in fostering actual donation behaviors within the population.

In contrast, the analysis did not find a statistically significant association between knowledge of blood donation and willingness to donate when asked ($X^2=0.272$, $p=0.791$). This lack of association suggests that while knowledge of blood donation may positively impact actual donation behavior, it does not necessarily translate into an increased willingness to donate in the future. This indicates that other factors beyond knowledge, such as personal beliefs, cultural influences, or health concerns, may influence an individual's willingness to donate blood.

In summary, the findings suggest that knowledge about blood donation plays a significant role in previous donation behavior but does not necessarily correlate with a readiness to donate in the future. This emphasizes the need for a comprehensive approach in designing blood donation programs, which should address not only educational aspects but also psychological and social factors to increase both willingness and actual participation in blood donation activities.

Table 9: Relationship between respondent's knowledge with attitude and practice of voluntary blood donation

Knowledge of blood donation	Respondents willingness to participate in voluntary blood donation	
	F (%)	X ² (p-value)
Yes	88 (94.6)	0.272 (0.791)
No	5 (5.4)	
Knowledge of blood donation	Practice voluntary blood donation	
Knowledge of Voluntary blood donation	182 (95.8)	6.544 (0.011)

DISCUSSION

This study examined the socio-demographic characteristics of respondents, their knowledge, attitudes, and practices regarding voluntary blood donation. The findings indicate significant associations between demographic factors and knowledge of blood donation, as well as the relationship between knowledge and actual donation practices.

The analysis revealed that a substantial majority of respondents (93.6%) possessed knowledge about blood donation, predominantly acquired through media and

social networks (Table 2). This high level of awareness underscores the importance of accessible information in shaping public understanding of blood donation. Similar studies, by Burgess et al. and Lichtenstein et al., have shown that media campaigns and interpersonal communication significantly enhance knowledge and encourage participation in donation programs [14, 15]. Notably, respondents demonstrated an understanding of common blood groups, with 88% knowing their own blood type, reflecting an essential aspect of donor readiness and safety.

A significant association was observed between respondents' gender, age, and educational background with their knowledge of blood donation (Table 6). Males and individuals aged 21–40 exhibited higher levels of knowledge, which aligns with findings from Fuchs et al. research indicating that younger, educated males are more likely to engage with health information and participate in health-related activities [16]. Conversely, no significant associations were found between marital status or occupation and knowledge, suggesting that these factors may have less impact on individuals' understanding of blood donation.

Despite the high levels of knowledge, the willingness to donate blood was influenced primarily by educational background (Table 7). This highlights the need for targeted educational interventions aimed at fostering a positive attitude toward voluntary donation among less educated populations. Additionally, the results indicated that 76.3% of respondents were willing to donate blood if called upon, but reasons for unwillingness included fear of needles (28.8%) and religious beliefs (16.9%) (Table 4). Addressing these barriers through comprehensive education and community engagement can be vital in increasing voluntary blood donation rates [17].

Further analysis revealed a significant relationship between knowledge and actual blood donation practices (Table 9), indicating that individuals with higher knowledge levels were more likely to have previously donated blood. This finding corroborates previous studies that emphasize the role of education in promoting donation behavior [18]. However, no significant association was found between knowledge and willingness to donate, suggesting that while knowledge can drive participation, it does not necessarily translate into a commitment to future donations. This points to the need for addressing psychological and cultural factors that may deter potential donors, despite their understanding of the process and its benefits.

In conclusion, this study highlights the critical role of education and awareness in promoting voluntary blood donation. It emphasizes the importance of targeted interventions that not only disseminate information but also address psychological and cultural barriers. Future initiatives should focus on creating supportive environments that encourage blood donation, leveraging media, community outreach, and educational programs to foster a culture of giving. By understanding the complex

interplay between knowledge, attitudes, and practices, stakeholders can develop more effective strategies to enhance voluntary blood donation rates and ultimately ensure a stable supply of safe blood.

CONCLUSION

The level of knowledge toward voluntary blood donation is higher than one would anticipate considering the fact that the study participants are adults within the general public which they are not much expected to have much information. There was a considerable level of favorable attitude observed among respondents. Voluntary Blood donation is considerably high relative to WHO standards: gender and age are associated with VBD exercise. Knowledge of VBD was high among the study participants but their practice was suboptimal, while a reasonable number had a positive attitude towards it. Success may be achieved if the impediments of blood donation as seen in this study is addressed, it may encourage more people to participate in voluntary blood donations

Limitation

The study was conducted in the urban setting so cannot be generalized to other geographical settings (rural).

The researcher had financial and time constraints in the course of carrying out the study.

Area of future studies

Larger scale of the study is required to analyze the geographical differences on knowledge, attitude, and practice of voluntary blood donation. A household-based survey was conducted to access the willingness to participate in VBD in Nigeria. Geographical and socioeconomic differences in the willingness to participate in voluntary blood donation.

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Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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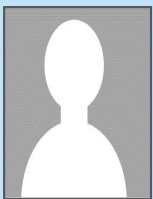
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