Original Article

Assessment of the Knowledge, Perception and Practice of Voluntary Blood Donation among Physicians in a Tertiary Health Facility, Uyo, South-South Nigeria

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Abstract

Background: Provision of safe, affordable and adequate supply of blood and blood products is a daunting public health issue in developing countries. In Nigeria, there is an inadmissibly high dependence on family surrogate and remunerated blood donors which carries an attendant increased risk of transfusion transmissible infections. Physicians represent a potential, stable and sustainable safe donor pool. Assessment of the blood donation practices of these health professionals is essential in engendering effective strategy for sustaining adequate and safe blood supply in the hospitals. To assess the knowledge, attitude and practice of voluntary blood donation among physicians, to identify, recruit and retain potential voluntary blood donors among them and to determine the associations between blood donation and gender, marital status, duration of practice and professional cadre of the physicians.

Methodology: This was a descriptive cross-sectional study carried out at the University of Uyo Teaching Hospital, Uyo. Pre-tested questionnaire were administered to 110 physicians in the tertiary hospital.

Results: Majority of the respondents (95.1%) had a good knowledge of the risk of transmission of infections by blood transfusion. The risk of transmission of HIV, HBV, HCV and Syphilis was affirmed by 99.8%, 95.6%, 80.1% and 48.2% respectively. Forty-five(40.9%) physicians had donated blood in the past, with 32 (71.1%) donating less than once a year, 10(22.2%) between 1-3 times a year and 3(6.7%) more than thrice a year. Most (56.9%) donated voluntarily, 34.3% donated for friends and relatives, 5.7% donated in order to know their HIV, HBV and HCV status and 3.1% for financial gratification. There was significant association between blood donation practice and gender but not with marital status, duration of practice and professional cadre of the physicians as P values were 0.002, 0.767, 0.135 and 0.625 respectively.

Conclusion: Physicians in the study expressed good knowledge of voluntary blood donation and had a positive attitude towards donation but there were inconsistencies in their practice of blood donation. Thus, regular and rigorous motivational and educational campaign should be intensified among physicians to improve their overall blood donation practice.

Keywords: Safe Blood; Voluntary Blood Donors; Remunerated Blood Donors; Physicians; Nigeria.

Introduction

Blood is a scarce commodity and indisputably the most donated tissue in medical practice. Blood transfusion can be lifesaving for individuals who have lost large volumes of blood from road traffic accidents, obstetric and gynecological haemorrhages, surgery, stem cell transplant, as well as those who have

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symptomatic anaemia from malignancies and other medical conditions[1].

Adequate and safe blood supply has remained a disconcerting challenge in Africa. Globally, eighty million units of blood are donated annually whereas only two million units are donated in sub-Saharan Africa where the need is enormous and demand for blood far outstrips its supply[2]. In Nigeria, there is shortage of regular blood donors to meet this demand in spite of the fact that half of the population are medically fit to donate. In addition to the inadequate supply, the safety with regard to the risk of transfusion transmissible infections is also an issue of utmost concern especially in resource –constrained settings. Generally, donors are classified into the following categories: voluntary, family replacement, remunerated or paid donors, and autologous donors. Blood procurement from voluntary, non-remunerated or unpaid donors has been adjudged to be the safest source of blood[3]. Thus the World Health Organization (WHO) has advocated that 100% of blood donation should be from voluntary blood donors[4]. Unfortunately, the practice in the country is a far cry from WHO recommendation. Commercial or paid and family replacement blood donors are still the major sources of blood supply in Nigeria[2,5,7], while the proportion of voluntary non-remunerated donation (VNRD) ranges from 3 to 5% compared to 98% in some advanced economies[8-12].

The dynamics of blood donation in developing and transitional countries is different from that of the developed countries. Studies have documented several barriers militating against voluntary blood donation in Africa. A survey by Asamoah-Akuobo et al[13] in Ghana showed that obnoxious spiritual, religious and cultural perceptions were the principal factors hampering voluntary blood donation. They also reported that donation for family and incentives were the motivating factors for blood donation[13]. Umeora et al[14], indentified socio-cultural barriers such as not having sufficient blood and not having food to eat, exposure to evil spirits among other reasons, as the major impediments to successful blood donation in a rural Nigerian population. Olaiya et al[15], in their study, identified factors such as fear of contracting diseases such as Human Immune Deficiency Virus (HIV) infection, Hepatitis B Virus (HBV) infection, loss of libido, weight loss and developing hypertension as reasons for refraining from blood donation. In all of the cited studies the reasons reported for not donating blood have been entirely due to misconception, misinformation and ignorance about the health benefits and safety of blood donation. Rigorous motivational and educational campaign are therefore a key factor for desirable attitudinal change by prospective donors towards blood donation.

Medical Doctors by virtue of their training and practice are expected to be knowledgeable about donor blood procurement procedures and the challenges of blood and blood product supply as well as the merits and perils of blood transfusion. They also constitute a potential pool of eligible though underutilized donors. The objectives of this study were to evaluate the level of knowledge, attitude, practice and perception towards voluntary blood donation among physicians in a tertiary healthcare facility, to identity and recruit potential voluntary voluntary blood donors among them and to determine the association, if any, between blood donation and gender, marital status, duration of practice and professional cadre of the physicians.

Materials and Methods

This was a descriptive cross-sectional study carried out at the University of Uyo Teaching Hospital (UUTH) Uyo Akwa Ibom State South-South Nigeria as part of the 2021 World Blood Donor Day Programme. The hospital is the only tertiary healthcare facility in the state and serves as a referral centre for private hospitals, primary and secondary public health facilities in the state and neighbouring states. It has over 500 physicians, the vast majority being house officers and resident doctors undergoing postgraduate training. The centre operates a hospital-based blood banking system which is highly dependent on blood procured from relative or family replacement and a few voluntary donors. The supplies are augmented by blood procured during mobile blood drives. Pre-tested structured interviewer administered questionnaire developed by the researchers in line with the objectives of the study were used for data collection. Ethical approval for the study was obtained from the University of Uyo Teaching Hospital Institutional Health Research Ethics Committee. Written Informed consent was obtained from the respondents. Confidentiality was ensured and participation was Voluntary.

Data were collated and analyzed with the statistical Package for Social Sciences (SPSS) 23. The results were presented in frequency tables. The associations between blood donation practice and gender, marital

status, duration of practice and professional cadre of the participating physicians were determined using Chi-Square Test. P values <0.05 were considered statistically significantly.

Results

One hundred and ten out of 115 respondents completed the study giving a response rate of 96%. The age range of respondents was 25 – 57 years (Mean age was 35.3±7.4 years). Majority of the respondents were males 75 (66.4%). Sixty- two (56.4%) were married while 43 (39.1%), 3(2.7%) and 2(1.8%) were single, separated and widowed respectively. Most respondents 63(57.3%) were resident doctors in different specialties of training. Majority of the physicians had been practicing in the facility for 1 – 5years. Physicians from 17 departments including Chemical Pathology (0.9%), Medical Microbiology and Parasitology (1.8%), Psychiatry (1.8%), Dentistry (1.8%), Radiology (1.8%), Ophthalmology (1.8%), Accident and Emergency (1.8%), Anatomic Pathology (2.7%), Otolaryngology (2.7%), Anaesthesia (3.6%), Community Medicine (4.5%), Haematology (5.5%), Obstetrics and Gynaecology (9.1%), Paediatrics (12.7%), Family Medicine (14.5%), Internal Medicine (15.5%) and Surgery (17.3%) participated. Most of the respondents were Christians (99.1%) and more than half 57 (51.8%) were of the Ibibio tribe (Table 1). Most respondents knew the common blood group types and their own blood groups. The blood groups of respondents were A Rh negative (1.8%), A Rh positive (27.3%), B Rh negative (0.9%), B Rh positive (13.6%), AB Rh positive (1.8%), ORh negative (3.6%) and O Rh positive(50.9%) Table 2.

The majority (95.1%) had a good level of knowledge of the risk of transmission of infections by blood transfusion. The risk of transmission of HIV, HBV, HCV and Syphilis was affirmed by 99.8%, 95.6%, 80.1% and 48.2% respectively while 16.2% and 2.1% affirmed that malaria and CMV can be contracted through transfusion. Forty-two percent stated that the minimum donation frequency was three months, 31.6% six monthly,10.4% monthly, 4.1% annually while 11.9% had no knowledge of this. Regarding volume of blood collected at each donation, 63.5% ticked less than 500ml, 22.1% stated 500-1000ml while 14.4% were ignorant of it (Table 3).

Ninety-two(83.6%) respondents said blood donation was essential. Voluntary donation was considered to be the best source of donor blood by 82.5%, followed by family replacement or relative donors 11.2%, self-donation 5.3% and paid donors 1%. Eighty-nine (80.9%) respondents said that blood donation has adverse effects, 5.2%, 9.1% and 85.7% stated that a donor might contract infection, become sick and weak respectively.

Forty-five (40.9%) physicians had donated blood in the past with 32 (71.1%) of them donating less than once a year, 10 (22.2%) between 1-3 times a year and 3(6.7%) more than thrice a year. Majority (56-9%) donated voluntarily, 34.3% donated for friends and relatives, 5.7% to know their HIV, HBV and HCV status and 3.1% for commercial reasons. Eight-six (78.2%) accepted to be invited to donate whenever the need arises but only 35% of them left their contacts.

Sixty-five (59.1%) had never donated blood. Reasons adduced for non-donation were varied. Twenty-five (38.5%) said they were not approached to donate, 26(40%) said they may need to donate for friends or relatives in the future, 9(13.8%) said they were not fit to donate, 17(26.2%) were afraid of needles, 4(6.2%) said that they did not want their blood to be sold and 3(4.6%) were scared of knowing their HIV, HBV and HIV status (Table 4).

The donation practice was significantly associated with the gender of the respondents (P=0.002). However, there was no significant association between the donation practice and marital status, duration of practice in the hospital and professional cadre of physicians (P values – 0.767, 0.135 and 0.625 respectively) Table 5.

Table 1: Socio-demographic Characteristics of Respondents

Parameter	N = 110	Percentage (%)
Age Range (Mean age)	25-57 (35.3±7.4years)	
Gender		
Male	73	66.4
Female	37	33.6
Marital Status		
Single	43	39.1
Married	62	56.4
Separated	3	2.7
Widowed	2	1.8
Professional Status		
House Officers	20	18.2
Medical Officers	3	2.7
Registrars	35	31.8
Senior Registrars	28	25.5
Consultants	24	21.8
Duration of Practice in the Facility		
< 1 year	26	23.6
1 – 5years	66	60
> 5years	18	16.4

Specialty		
Chemical Pathology	1	0.9
Medical Microbiology and Parasitology	2	1.8
Psychiatry	2	1.8
Dentistry	2	1.8
Radiology	2	1.8
Ophthalmology	2	1.8
Accident and Emergency	2	1.8
Anatomic Pathology	3	2.7
Otolargngology	3	2.7
Anaesthesia	4	3.6
Community Medicine	5	4.5
Haematology	6	5.5
Obstetrics and Gynaecology	10	9.1
Paediatrics	14	12.7
Family Medicine	16	14.5
Internal Medicine	17	15.5
Surgery	19	17.3
Religion		
Christianity	109	99.1
Islam	1	0.9
Tribe		
Ibibio	**57**	**51.8**
Annang	26	23.6
Oro	3	2.7
Efik	2	1.8
Ejagham	1	0.9
Ijaw	2	1.8
Tiv	1	0.9
Igbo	15	13.6
Yoruba	3	2.7

Table 2: Blood Groups of Respondents

Blood Group	N(%)
A Rh D negative	2(1.8)
A Rh D positive	30(27.3)
B Rh D negative	1(0.9)
B Rh D positive	15(13.6)
AB Rh D positive	2(1.8)
O Rh D negative	4(3.6)
O Rh D positive	56(50.9)

Table 3: Knowledge on Blood Donation

Section A: Knowledge of Blood Groups N(%)	**Section B: Knowledge of Blood Donation N(%)**
Do you know the common blood groups?	Who Should donate blood?
Yes 109(99.1)	Men 110(100)
No 1(0.9)	Women 92(83.6)
Do you know your blood group?	Children 8(7.3)
Yes 107(97.3)	Old (> 60years) 5(4.5)
No 3(2.7)	Who should not donate blood?
Can a person be infected by receiving blood transfusion?	Menstruating/Pregnant/Lactating
Yes 105(95.5)	Women 95(86.4)
No 5(4.5)	Children 102(92.7)
What diseases are transmissible by blood transfusion?	Old (>60years) 105(95.5)
Yes 105(95.5)	What volume of blood is collected during each donation?
No 5(4.5)	< 500mls 70 (63.5)
What diseases are transmissible by blood transfusion?	500-1000mls 24 (22.1)
HIV 110(99.8)	Don't Know 16 (14.4)
HBV 105(95.6)	What is the duration of a donation process?
HCV 88(80.1)	< 20minutes 88(80)
Syphilis 53(48.2)	20-60minutes 8(7.3)
Malaria 18(16.2)	Don't Know 14(12.7)
CMV 2(2.1)	
Others 3(2.7)	
How often can an individual donate?	
Monthly 11(10.4)	
3 Monthly 46(42)	
6 Monthly 35 (31.6)	
Annually 5 (4.1)	
Don't Know 13 (11.9)	

Table 4: Attitude and Practice of Blood Donation

Section A: Attitude Towards Blood Donation. N(%)	**Section B: Practice of Blood Donation. N(%)**
What do you think about blood donation?	Have you donated before ?
Good 92 (83.6)	Yes 45 (40.9)
Bad 14 (12.7)	No 65 (59.1)
Neutral 4 (3.6)	How often do you donate?
What do you think is the best source of donor blood?	< 1 time a year 32 (71.1)
Voluntary donor 91(82.5)	1 – 3 times a year 10 (22.2)
Replacement donor 12 (11.2)	> 3 times a year 3 (6.7)
Remunerated donor 1 (1)	Why did you donate?
	A friend or relative needed blood 38 (34.3)
Self - donor 6 (5.3)	Voluntary 63 (56.9)
Can something happen to a blood donor during or after donation?	For remuneration 3 (3.1)
Yes 89 (80.9)	To know my screening status 6 (5.7)
No 19 (17.3)	Will you donate if called upon or reminded to do so?
I don't know 2 (1.8)	Yes 86 (78.2)
What can happen to a blood donor during or after donation?	No 24 (21.8)
Contact Infection 6 (5.2)	Number of those who left their contacts 39 (35)
Weakness 94 (85.7)	Reasons for non-donation by non-donors
Fall sick 10 (9.1)	Not approached to donate 25 (38.5)
	Unfit to donate 9 (13.8)
	Need to donate for friends or relatives in future
	Fear of needles 17 (26.2)
	Fear of knowing my status 3 (4.6)
	Don't want my blood to be sold 4 (6.2)

Table 5: The association between gender, marital status, duration of medical practice, professional cadre of physicians and blood donation

Variables	**Donors (%)**	**Non-donors (%)**	**Total**
Gender			
Male	31 (42.47)	42 (57.53)	73
Female	14 (37.84)	23 (62.16)	37
Total	45 (40.91)	65 (59.09)	110
P = 0.002			
Marital Status			
Single	26 (60.47)	17 (39.53)	43
Married	35 (56.45)	27 (43.55)	62
Separated	2 (66.67)	1 (33.33)	3
Widowed	2 (100.00)	0 (0.00)	2
Total	65 (59.09)	45 (49.91)	110
P = 0.767			
Duration of Medical Practice			
< 1 year	9 (34.62)	17 (65.38)	26
1 – 5 years	20 (30.30)	46 (69.70)	66
> 5 years	16 (88.89)	2 (11.11)	18
Total	45 (40.91)	65 (59.09)	110
P = 0.135			
Professional Cadre of Physicians			
House Officers	7 (35.00)	13 (65.00)	20
Medical Officers	2 (66.67)	1 (33.33)	3
Registrars	14 (40.00)	21 (60.00)	35
Senior Registrars	9 (32. 14)	19 (67.86)	28
Consultants	13 (54.17)	11 (45.83)	24
Total	45 (40.91)	65 (59.09)	110
P = 0.625			

Discussion

Ensuring sufficient and regular supply of safe blood and blood products is a vital component of quality healthcare delivery system. A blood transfusion practice based on voluntary non-remunerated blood

procurement is crucial to achieving this level of care, particularly in low and middle-income countries where there are a number of factors bedeviling transfusion practice, ranging from shortage and unaffordability of donor blood units, ineffective donor screening methods, poor implementation of blood transfusion guidelines, infrastructural deficiencies to high prevalence of transfusion-transmissible infections (TTIS), such as hepatitis and human immune deficiency viruses [16]. Therefore, efforts to correct the blood supply deficit, ensure the attainment of blood transfusion safety and increase the pool of voluntary (nonremunerated) blood donors will involve understanding the knowledge, attitude, practice and perception of potential blood donors towards voluntary blood donation.

The socio-demographic characteristics of the donor population are known to influence donor attitude and behaviour[7]. Physicians by virtue of their training are custodians of information regarding blood donation and transfusion practices. They are the ones who request, utilize and manage conditions that require use of blood and blood products. The extent to which this knowledge influences their blood donation practice is yet to be fully elucidated. In this study, we observed 40.9% blood donation by physicians, majorly from those who had been in practice between 1year and 5 years, 31.1% of them were Registrars and 28.9% were regular donors and 56.9% of these were voluntary. Eight-six (78.2%) accepted to be recruited and invited to donate whenever the need arose but only 35% of them documented their contacts. This was a stark departure from what was expected given that physicians are expected to be highly informed about the processes of donor blood procurement hence should have a positive disposition to blood donation. Voluntary blood donation among medical practitioners though low generally, our finding is somewhat comparable with those reported by Nwogoh et al in Benin, Nigeria[6] and Arage et al in Gondar, Ethiopia[18]. However, the result of this study is relatively high compared to the findings of the studies conducted in Dhaka, Bangladesh[19] New Deihi, India[20], and Ilorin, Nigeria[9], where the practice of blood donation among the study population was 16%, 10.8%, and 15.3% respectively.

In the present study, the mean age of the respondents was 35.3±7.4 years and the predominant proportion of these participants were within the age group eligible for blood donation hence they constituted a substantial pool of potential donors [8]. This finding is consistent with earlier reports by other workers[6,21,22] and has a huge implication on blood supply considering the fact that physicians represent a potential, stable, and sustainable donor population[6,18,21,22]. There is need to conscientiously harness this potential pool of donors if the WHO 100% voluntary blood donation benchmark is to be achieved. Blood donation sensitization and awareness campaign targeted at this cohort has the potential of enhancing recruitment and retention.

The respondents demonstrated an overall good knowledge of blood donation. As expected they displayed a satisfactory knowledge with regard to common blood groups, common transfusion transmissible infections though the vast majority did not mention syphilis, CMV and other rare infections. This may be due to the reduced rate of screening for syphilis in some hospital-based blood banks and non-inclusion of malaria and CMV in donor screening menu. It could also be attributed to the respondents' limited knowledge of donor blood procurement processes given that most of the study participants were non-laboratory physicians. The frequency and distribution patterns of ABO and Rh(D) blood groups were similar to reports of previous studies done in the centre[23,24].

Feeling that they are medically unfit to donate, not being approached to donate, fear of needles or knowing their screening status and feeling that their blood will be sold were among the reasons the respondents cited for declining to donate. Considering the hospital environment, it would appear intuitive for physicians to be conversant with the challenges of donor blood procurement and utilization constraints of balancing the supply and demand for blood products based on their practices including ordering and administering blood products to patients. Thus it is astonishing that "not being approached to donate blood" was a common reason for not donating.

In this study, more males donated blood than females. The predominant male donor population is in consonance with the findings of Orkuma et al[25], Nwogoh et al[6] and Buseri et al[26] but contrasts those of AndadeNeto et al[27] and Ogundeji et al[28] who reported higher female donation rates. Generally, some studies have recorded high deferral rates of female blood donors with attendant low female recruitment as blood donors[29,30]. Several reasons have been adduced including temporary deferral due to anaemia resulting from menstruation, uncompensated blood losses as a result of parturition and lactation [31]. Also, in some

settings and cultures, inadequate information and education, certain misguided socio-cultural beliefs have also been reported to play a role in hindering female participation in blood donation processes[13,14].

Married donors (53.85%) were more than single donors (40.00%) in our study. This observation agrees with the findings of Burgdorf et al[32] and Mesch et al[33] but differs from that reported by Andrade Neto et al[27]. This may probably be due to the higher number of married donors recorded in this study or related to the better social networks or community connectedness common among married people compared to their unmarried counterparts, that motivate their donation behaviour to benefit others[33].

The study has some inherent limitations. The sample size and distribution of participants were limited by the on-going COVID-19 pandemic, Also, self-reported practice data are fraught with many sources of potential bias not allowing for independent verification. However, findings from this study may serve as a veritable framework for a goal-driven sensitization campaign to motivate, recruit and retain prospective blood donors.

Conclusion

Physicians in the study expressed good knowledge of voluntary blood donation and had a positive attitude towards donation but there were inconsistencies in their practice of blood donation. Thus, regular and rigorous motivational and educational campaign should be intensified among physicians to improve their overall blood donation practice.

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