Evaluation of Knowledge, Attitude and Practice of voluntary Blood Donation among Healthcare Support Staff of a Tertiary Health Facility in Uyo, Nigeria.

ABSTRACT

Background

Blood transfusion is a veritable intervention in many clinical situations. However, the provision of safe, readily available, affordable and adequate supply of blood and blood products is still a major public health challenge in developing countries like ours. Healthcare support staff are expected to be conversant with donor blood procurement processes and the challenges of blood supply, therefore should take the lead in forestalling the occurrence of blood supply deficits.

Aims: To assess the knowledge, attitude and practice of voluntary blood donation among non-physician healthcare workers.

Method: This was a cross-sectional study carried out at the University of Uyo Teaching Hospital, Uyo. A total of 120 Staff were recruited. Pre-tested questionnaire were used to assess their knowledge, attitude and practice of voluntary blood donation.

Results: The mean age of the respondents was 36.9±9.8 years, range 18-58 years with females accounting for 51.7%. Sixty percent were married, 86.7% attained

tertiary level of education and majority of the respondents (20.8%) were nurses. Most of the study participants had good knowledge and positive disposition towards blood donation. However, only 25.8% had donated blood in the past with 38.7% being voluntary. Male staff were more likely to donate (P = 0.001). There were no statistically significant associations between blood donation practice and marital status, level of education and professional status of the respondents (P values – 0.083, 0.557 and 0.05 respectively)

Conclusion

There is need for active education program to encourage the healthcare workers and the general populace to participate in voluntary blood donation.

KEYWORDS: Blood transfusion, blood products, Healthcare Support Staff, voluntary blood donation, Uyo.

INTRODUCTION

Blood transfusion is an invaluable component of contemporary health care delivery system. It can be life saving for individuals who have lost large volumes of blood from severe road traffic accidents, obstetric and gynaecological haemorrhages, surgery, stem cell transplants as well as for those who have symptomatic anaemia from medical or haematological conditions or malignancies. Hence, blood is an indispensable element of human life. However, this therapy may be complicated

by infectious and immunological diseases some of which could be life threatening [1].

Despite substantial promising research, an ideal substitute for blood and blood components may not be available in the foreseeable future [2]. Therefore, blood donation by humans will continue to be the principal source of blood and blood components. Generally, the sources of donated blood are voluntary donors, self donors, paid or remunerated donors and relative or family replacement donors (as a replacement for their relatives' and friends' needs). The safest blood donors are the voluntary donors who donate on humanitarian grounds, out of their own free will or sense of duty or responsibility to society and do not expect to receive any incentives and are self-aware of their ineligibility to serve as blood donors if they indulge in risky lifestyles through which they might be infected with microorganisms that can be transmitted through transfusion [3,4]. The prevalence of transfusion transmissible diseases is highest with the use of blood procured from paid or commercial donors [5-8]. A person who is in need of money is more likely to conceal his or her true health status. Pecuniary remuneration which is often offered as a donor motivating tool, might be highly appealing to people who are in dire socio-economic straits.

Provision of safe, readily available, affordable and adequate supply of blood and blood products is a major challenge in developing countries like Nigeria [7]. The

national requirement for blood in Nigeria is estimated at 1,336,000 units per year but only 1,130,000 units are collected, most of which are provided by blood vendors. Voluntary blood donation accounts for less than 10% of blood procured in most of the blood banks in our country [9]. This is a far cry from the World Health Organization (WHO) recommendation that 100% of the blood requirements should be from voluntary, non-remunerated blood donors [10].

WHO estimates that the annual average blood need for any population is one percent of that population [11]. Akwa Ibom State with a population of 4.1milion [12] therefore requires at least 40,000 units of blood yearly to meet its transfusion needs. University of Uyo Teaching Hospital (UUTH) being the only tertiary health facility in the state and having the largest patients' population some of whom may require blood transfusion in the course of their treatment is thus obligated to provide a considerable proportion of the estimated blood needs of the state. However from our blood bank records, we constantly fall short of the target blood supply from the population.

The attitude, perception and level of knowledge regarding blood donation are known to influence the disposition of potential donors to blood donation. It is against this backdrop that this study seeks to examine the extent to which these factors demographic characteristics affect the blood donation practice of Staff

(nonphysicians) of UUTH; to identify, recruit and retain potential voluntary blood donors among them and to determine the associations between blood donation and gender, marital status, professional status and level of education of the staff.

MATERIALS AND METHODS

This was a cross-sectional descriptive study conducted at the University of Uyo Teaching Hospital (UUTH), Uyo. The centre operates a blood banking system which is primarily dependent on blood procurement from family replacement donors. Their blood needs are augmented by supplies from mobile blood drives and a few voluntary donors. The hospital has over 2,000 health workers (nonphysicians) in various departments. The staff are categorized as Junior and senior staff according to their academic qualifications and job descriptions. Senior staff are employed into positions requiring tertiary education qualifications such medical laboratory scientists, nurses, pharmacists, physiotherapists, radiographers, engineers and accountants, while junior staff are employed into positions which often require lower qualifications such as cleaners, clerical officers, record clerks, technicians and health attendants.

A total of 200 health workers were recruited from the various departments using quota sampling method. Pretested questionnaire were administered to assess their knowledge, attitude and practice of voluntary blood donation. Written informed consent was obtained from all the participants. Ethical approval was obtained from

the Ethics and Research Committee of UUTH before the study was undertaken. The 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 donor practice and gender, marital status, professional status and level of education of respondents were tested using Chi-squre. P-values <0.05 were considered statistically significant.

RESULTS

A total of 120 health workers completed the questionnaire giving a response rate of 60%. The age range of the respondents was 18-58 yeas (mean age was 36.9 $\pm$ 9.8 years). The male to female ratio was 1:1.1. Seventy-two (60%) were married, 42(35%) were single, 3(2.5%) were separated and 3(2.5%) were widowed. Majority (86.7%) attained tertiary level of education. Nursing staff were 30(25%), medical laboratory scientists 19(15.8%), pharmacists 13(10.8%) and radiographers 9(7.5%) among others. Details of the demographic characteristics are represented in Table 1.

Table 1: Sociodemographic characteristics of respondents

(1)	Age range (mean age) 18-58 (36.9 $\pm$ 9.8) years		
		N = 120	Percentage (%)
(2)	**Gender**		
	Male	58	48.3

	Female	62	51.7
(3)	**Marital status**		
	Single	42	35
	Married	72	60
	Separated	3	2.5
	Widowed	3	2.5
(4)	**Educational Status**		
	No formal education	1	0.8
	Primary	5	4.2
	Secondary	10	8.3
	Tertiary	104	86.7
(5)	**Category of Staff**		
	Junior	16	13.3
	Senior	104	86.7
(6)	**Professional Status**		
	Nurse	25	20.8
	Pharmacist	13	10.8
	Medical laboratory scientist	20	16.7
	Radiographer	9	7.5
	Physiotherapist	5	4.2
	Optometrist	4	3.3
	Optician	2	1.7
	Dietitian	2	1.7
	Psychologist	2	1.7

Social worker	2	1.7
Community Health worker	1	0.8
Accountant	2	1.7
Engineer	2	1.7
Lawyer	1	0.8
Health Information Officer	2	1.7
Health Attendant	3	2.5
Administrative Officer	18	15
ECG Technician	1	0.8
Oxygen Technician	2	1.7
Plaster technician	1	0.8
Plumber	1	0.8
Porter	2	1.7

A total of 109 (90.8%) respondents had good knowledge of the common blood group types and 111 (92.5%) knew their own blood groups. The blood groups of respondents were A Rh negative 2 (1.7%), A Rh positive 30(25), B Rh positive 13 (10.8%), AB Rh positive 3(2.5%), O Rh negative 8(6.7%) and O Rh positive 64(53.3%)

Most respondents 117 (97.5%) were aware of the risk of transmission of infections through transfusion. The risk of transmission of HIV, HBV, HCV and syphilis was affirmed by 114(95%), 86(71.7%), 78(65.0%) and 41(34.2%) respectively.

Fifty-two (43.3%) stated that the minimum donation interval is six months, 34 (28.3%) said three months, 8(6.7%) said one month, 7(5.8%) said one year while 19(15.8%) said they had no knowledge about it.

The majority of the respondents expressed a satisfactory knowledge on who should donate and who should not donate. Ten (8.3%) and 16(13.3%) respondents said people should not donate for cultural and religious reasons, respectively.

Forty-four (36.7%) knew the actual volume of blood collected during the process of donation. Thirty-eight(31.7%) knew that the donation process lasts less than 20 minutes. Details of the respondents' knowledge of blood donation are shown in Table 2.

Table 2: Knowledge on blood donation

Do you know the common blood groups	**N(%)**
Yes	109 (90.8)
No	11 (9.2)
Do you know your blood group?	
Yes	111 (92.5)
No	9 (7.5)
Blood groups of respondents	
A Rh negative	2 (1.7)
A Rh positive	30 (25)
B Rh positive	13 (10.8)
AB Rh positive	3 (2.5)
O Rh negative	8 (6.7)
O Rh positive	64 (53.3)
Can a person be infected by receiving transfusion?	
Yes (correct)	117 (97.5)
No (incorrect)	3 (2.5)
What diseases are transmissible by blood transfusion?	
HIV	114 (95)
HBV	86 (71.7)
HCV	78 (65)

Syphilis	41 (34.2)
Malaria	36 (30)
How often can an individual donate?	
Monthly	8 (6.7)
3 monthly	34 (28.3)
6 monthly	52 (43.3)
Annually	7 (5.8)
I don’t know	19 (15.8)
Who should donate blood?	
Men (correct)	109 (90.8)
Women (correct)	96 (80)
Children (<18years) (incorrect)	13 (10.8)
Old (>65years) (incorrect)	3 (2.5)
Who should not donate blood?	
Men (incorrect)	11 (9.2)
Women (incorrect)	24 (20)
Young (<18years) (correct)	68 (56.7)
Old (>65years) (correct)	101 (84.2)
Cultural belief (incorrect)	10 (8.3)
Religious belief (incorrect)	16 (13.3)
What volume of blood is collected during each donation?	
<500mls (correct)	44 (36.7)
500 – 1000mls (incorrect)	52 (43.3)
Don’t know	24 (20)
What is the duration of a donation process?	
<20 minutes	38 (31.7)

20 – 60 minutes	29 (24.2)
Don't know	53 (44.2)

Ninety-nine (82.5%) respondents said blood donation was good. Voluntary blood donation was accepted as the best source of donor blood by 76(63.3%) respondents, family replacement by 29(24.2%), remunerated by 2(1.7%) and self donation by 3(2.5%).

Eight-three (69.2%) respondents said blood donation may have untoward effects. One hundred and twelve (93.3%) said the donor may experience temporary weakness, 30(25%) said a donor may be exposed to infections, 22(18.3%) said it may cause sexual failure, 18(15%) said it may lead to high blood pressure, 12(10%) said the donor may fall sick and 5(4.2%) said it may cause sudden death. Details of respondents' attitude to blood donation are shown in Table 3.

Table 3: Attitude and practice of blood donation

	N(%)
Attitude towards blood donation	
What do you think about blood donation?	
Good	
Bad	
Neutral	
Who do you think is the best source of donor blood?	
Voluntary donor	76(63.3)

Replacement donor	29 (24.2)
Remunerated donor	2 (1.7)
Self donor	3 (2.5)
I don't know	10 (8.3)
Can something harmful happen to a blood donor during or after donation?	
Yes	91 (75.8)
No	21 (17.5)
I don't know	8 (6.7)
What can happen to a blood donor during or after donation?	
Temporary weakness	112(93.3)
Contract infections	30(25)
Sexual failure	22(18.3)
Raised blood pressure	18(15)
Fall sick	12(10)
Sudden death	5(4.2)
Practice of blood donation	
Have you donated before?	
Yes	31(25.8)
No	89(74.2)
How often do you donate?	
< 1 time a year	22 (18.3)
1 – 3 times a year	7 (5.8)
> 3 times a year	2 (1.7)
Why did you donate?	

A friend or relative needed blood	13(10.8)
Voluntary	12(10)
For financial reasons	2 (1.7)
To know my screening status	4(3.3)
Will you donate if called upon to donate?	
Yes	57(47.5)
No	39(32.5)
Neutral	24(20)
Number of those who stated their contacts	21(17.5)
Reasons for nondonation by nondonors	
Not approached to donate	20(16.7)
Unfit to donate	13(10.8)
Need to donate for friends or relatives in future	17(14.2)
Fear of needles	46(38.3)
Fear of complications of blood donation	49(40.8)
Fear of knowing my screening status	52(43.3)
My religion forbids it	2(1.7)
My blood may be sold	6(5)

Thirty-one (25.8%) had donated in the past. Nine (29%) were regular donors. Twelve (38.7%) were voluntary and 13(41.9%) donated to a friend or relative who needed blood. The nondonors cited several reasons for not donating blood including not being approached to donate 20(16.7%), unfit to donate 13(10.8%), needed to donate for a friend or relative in future17(14.2%), that their religion prohibits blood donation 2(1.7%); some stated more than one reason for not

donating blood notably fear of needles 46(38.3%), fear of complications of blood donation 49(40.8%), that their blood may be sold 6(5%) and fear of knowing their screening of status 52(43.3%).

Fifty-seven (47.5%) respondents accepted to be invited to donate blood but only 21(17.5%) wrote their contacts so that they could be reached. There was a significant association between gender of the respondents and blood donation (P=0.001). The marital status, level of education and professional status of the respondents had no significant association with blood donation practice (P values – 0.083, 0.557 and 0.05 respectively) Table 4.

Table 4: The association between gender, marital status, level of education, professional status and blood donation

Variables	**Donors (%)**	**Non-donors (%)**	**Total**
Gender			
Male	22(37.9)	36(62.1)	58
Female	9(14.5)	53(85.5)	62
Total	31(25.8)	89(74.2)	120
P = 0.001			
Marital Status			
Single	11(26.2)	31(73.8)	42
Married	19(26.4)	53(73.6)	72

Separated	1(33.3)	2(66.7)	3
Widowed	0(0)	3(100.0)	3
Total	31(25.8)	89(74.2)	120
P = 0.083			
Level of education			
No formal education	0(0)	1(100.0)	1
Primary	0(0)	5(100.0)	5
Secondary	2(20)	8(80)	10
Tertiary	29(27.9)	75(72.1)	104
Total	31(25.8)	89(74.2)	120
P = 0.557			
Professional status of Respondents			
Nurse	8(32)	17(68)	25
Pharmacist	2(15.4)	11(84.6)	13
Medical laboratory scientist	11(55)	9(45)	20
Radiographer	3(33.3)	6(66.7)	9
Physiotherapist	1(20)	4(80)	5
Optometrist	1(25)	3(75)	4
Optician	0(0)	2(100.0)	2
Dietitian	1(50)	1(50)	2
Psychologist	0(0)	2(100.0)	2
Social worker	0(0)	2(100.0)	2
Community Health Worker	0(0)	1(100.0)	1
Accountant	0(0)	2(100.0)	2
Engineer	0(0)	2(100.0)	2

Lawyer	0(0)	1(100.0)	1
Health Information Officer	0(0)	2(100.0)	2
Health Attendant	1(33.3)	2(66.7)	3
Administrative officer	2(11.1)	16(88.9)	18
ECG Technician	0(0)	1(100.0)	1
Oxygen technician	0(0)	2(100.0)	2
Plaster technician	0(0)	1(100.0)	1
Plumber	0(0)	1(100.0)	1
Porter	1(100.0)	0(0)	1
Total	31(25.8)	89(74.2)	120

P = 0.05

Discussion

The high dependence on family replacement and remunerated blood donors to mitigate blood supply deficits have grave implications for transfusion safety [7]. This is particularly grievous in settings like ours which is still dependent on the traditional antibody screening method instead of nucleic acid test for detection of transfusion transmissible infections in potential donors. The situation is further exacerbated by the lack of pathogen inactivation, leucodepletion and irradiation of blood products and non-prioritization of blood sourcing from voluntary, non-remunerated blood donors. Thus, there is need to scale up the recruitment and retention of voluntary donors to safeguard the health of both the donor and the recipient of the blood and blood products.

Several workers have assessed the knowledge, attitude and practice of voluntary blood donation among various categories of persons [3,13-16]; however, there is paucity of information on this subject among healthcare workers in our country and globally [1,17]. In this study, we sought to determine the level of knowledge,

attitude and practice of voluntary blood donation among healthcare workers (nonphysicians) in a tertiary care hospital and the associated factors that influence their disposition towards blood donation. The results of the study indicate that their overall knowledge of blood groups, possible transfusion transmissible infections and the appropriate donor population was good. This observation is in keeping with findings of previous studies (1,17,18].

Our study also revealed a positive attitude of the workers towards blood donation, but there were inconsistencies in their voluntary blood donation practice. In spite of the fact that all the study participants were within the age bracket of potential blood donors, only 25.8% of them had donated blood in the past, out of which 29% were regular donors, 41.9% were family replacement and 38.7% voluntary donors. This is indeed surprising given the remarkable knowledge and attitude displayed in this study. Ninety-nine (82.5%) respondents said blood donation was good and 57(47.5%) of them accepted to be invited in the future for voluntary blood donation but only 21(17.5%) gave their contacts. This reflects a significant disparity in their level of knowledge, attitude and practice and therefore calls for intensified and conscientious education of the prospective donors.

In a related study conducted in Benin City, Nigeria, a similar pattern was observed although different proportion of blood donors were reported among the healthcare workers. The investigators recorded 22.1% blood donation by healthcare workers, with 13.9%, 52.8% and 41.7% of the participants being regular, family replacement and voluntary blood donors respectively [1].

In the present study, nine (7.5%) of the participants said blood donation was bad while seventeen (14.2%) were indecisive. These findings are in agreement with

those of other studies [1,19]. However, these contrast a study conducted by Mullah et al in a tertiary healthcare facility in Gujarat, India where the respondents displayed a poor knowledge of the donor eligibility criteria with 91% perceiving blood donation as unsafe despite 40% of them having donated blood themselves and 80% having relatives who were blood donors [20].

Most of our study participants expressed unsatisfactory knowledge of donor blood procurement processes. This is in line with the findings of earlier studies in Nigeria [1] and Ethiopia [17]. On the contrary, in a similar study in Greece, Sousos et al. assessed the knowledge of 291 healthcare workers and found that majority of them had acceptable knowledge of blood donation processes [21]. The variation in knowledge may be attributable to the degree of enlightenment of the healthcare workers and their level of participation in blood donation and procurement processes.

There were many reasons given by those who had never donated for not donating blood. The common reasons were fear of needless, fear of complications of blood donation and fear of knowing their screening status and that nobody approached them to donate. These observations have been corroborated by previous studies [1,3,15,18,20]. In our study, lack of request was the fourth reason that the respondents mentioned for not donating blood. Interestingly, this reason has been reported as the major one in some series [1,18]. This underscores the need for

fervent sensitization and education of all and sundry through the mass media to encourage the populace to visit the blood bank for a blood donation exercise.

Marital status, level of education and professional status of the healthcare workers did not influence their attitude towards or likelihood of donating blood in our study; rather, gender of the respondents had a statistically significant association with their practice of blood donation. These findings are in concordance with those of studies conducted by Nwogoh et at [1] and Malako et al [17].In this study, more males donated blood than females. The finding of predominant male donor population agrees with the findings of earlier studies [1,22,23] but is in dissonance with those of Andade Neto et al [24] and Ogundeyi et al [25] who reported higher female donation rates. Generally, some studies have documented high deferral rates of female blood donors with attendant low female recruitment as blood donors [26,27].

The reasons for the fewer number of female donors is not far-fetched given that one factor or another may interfere with their chances of being eligible to donate. Factors such as anaemia from menstruation, uncompensated blood losses as a result of childbirth and lactation may prevent them from donating blood. Furthermore, , in some cultural settings, inadequate information and education, certain misguided socio-cultural beliefs and obnoxious traditional practices have

been reported to play a role in hampering female participation in blood donation processes [28,29].

The study has some limitations. The sample size and distribution were limited by the on-going Covid-19 pandemic. The cross-sectional design used might not allow for the definition of the cause- effect relationship of the socio-demographic parameters with the blood donation practice of the respondents. Also, self reported practice data are subject to many sources of potential bias precluding independent verification.

Conclusion

Healthcare workers in our institution are reasonably informed and exhibit good attitude towards blood donation. However, only a small proportion of the staff had donated in the past and are positively disposed to donate blood. Therefore, there is the need for active educational programs for blood donation to create more awareness and improve knowledge and practice of voluntary blood donation among the staff if provision of adequate and safe blood is to be achieved.

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