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ORIGINAL ARTICLE

Knowledge of Blood Donation among Adults in North-Central Nigeria

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ABSTRACT

Background: About half of the population in Nigeria is medically fit for blood donation but only four in one thousand are voluntary donors. The low level of blood donation has been attributed to poor knowledge, misconceptions, myths, bias, poverty, fear, malnutrition among the population. Therefore, this study assessed the knowledge of blood donation among adults in two selected North Central States of Nigeria.

Methods: It was a descriptive cross-sectional study. A total of 3104 respondents comprising of adults between 18 and 60 years were involved in the study. A multistage sampling technique was used and the research tool was interviewer-administered questionnaire. The data generated were entered into the computer and subjected to appropriate statistical analysis using EPI INFO computer software package (version 3.5.3). Pearson Chi Square (χ^2) was used to test statistical significance and p-value was set at < 0.05.

Results: Majority of the respondents 2565 (82.5%) knew that blood donation save lives. More than three-quarters, 2468 (79.5%), knew where to go for voluntary blood donation. About one-third, (37.1%), demonstrated good knowledge of voluntary blood donation. Older respondents (>60 years) had poor knowledge of blood transfusion compared with younger age groups ($p<0.001$). Respondents' occupation and educational status were significantly associated with knowledge of blood transfusion ($p<0.001$)

Conclusion: Periodic awareness programme on voluntary blood donation in rural and urban areas across Nigeria is needed. In addition, sensitization of the informal sector on the significance of non-remunerated voluntary blood donation should be given priority.

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INTRODUCTION

Blood is the most donated tissue in medical practice and a veritable tool in many live-saving situations when used judiciously. Blood donation is the act of giving one's blood so it can be transfused into another for therapy.[1] It is harmless, safe and advantageous to the donor, recipient, community and the blood transfusion service.[1]Globally, eighty million units of blood are donated each year but only two million units are donated in sub-Saharan Africa where the need is enormous.[2]

In Nigeria, although half of the population in the country is medically fit for donation, only four in one thousand are voluntary blood donors.[3] Indeed, in Nigeria, myths, misconception, bias, poverty, ignorance, fear and malnutrition have posed a serious barrier to blood donation.[4]

Poor knowledge of and unfavorable attitude and misconceptions towards blood donation have negatively impacted on the blood donation drive as seen in a study in Nepal, India.[4] The increased demand for blood products by the health service implies that hospitals are dependent on a constant supply of blood. The factors that influence an individual's decision to give blood consist of a collection of an individual's specific observable characteristics such as socio-demographic factors and unobservable characteristics such as the degree of altruism.[5] In order to facilitate the process of transition to non-remunerated donation, it is essential to examine and understand donor behavior. According to some research findings, blood donation correlates with donor gender, place of birth, occupation and knowledge about donation as well as such social attitudes as health related, structural and social-economic incentives.[6]

Indeed, the level of adequate knowledge towards blood donation is estimated to be 60% in developing countries.[3] A study by Salaudeen *et al* [1, 2] in Ilorin, North central, Nigeria, reported that less than two-thirds (64.8%) of the respondents had good knowledge of blood donation. About one-quarter (25.8%) had poor knowledge on what actually blood donation entails. Less than half (47.5%) of the subjects had poor knowledge on health conditions that could warrant blood transfusion while only 43% could correctly state some of the clinical conditions that would indicate blood transfusion. In terms of knowledge of diseases transmissible through blood transfusion, a study conducted in Northeast, Nigeria, by Goni *et al* [7] revealed that more than three-quarters (77.5%) of respondents had knowledge that some diseases could be transmissible through blood transfusion. Of those who had knowledge about these diseases, 64% knew of HIV, while 25.9% and 9.6% knew of Hepatitis and Malaria, respectively.

At the University of Benin Teaching Hospital (UBTH) in Nigeria, respondents expressed good knowledge of the common blood group types and of their own blood group; and also demonstrated knowledge of risk of transmission of diseases through blood transfusion.[8] The respondents also demonstrated knowledge of frequency of blood donation as 35% said donation should be every 6 months; 35.7% tri-monthly; 11.4% monthly while 9.3% had no knowledge of this. On knowledge of volume of blood collected during blood donation, 60.7% stated less than 500mls, 34.3% 500-1000mls while 21.4% expressed no knowledge of it.[8] In South India, among health professionals, Manikanda *et al*[9] found that overall knowledge on blood donation among respondents was 35.65%. Majority of the participants (89.25%) had never donated blood and 36.41% of these had negative attitude. For example, 12.61%, 19.61% and 4.2% of the non-donors felt that blood donation leads to weakness, anemia and reduced immunity, respectively. About 63.59% of non-donors showed positive attitude by expressing their willingness to donate blood if they were asked to donate blood (32.21%). However, 7% of the non-donors don't know the importance and health benefits of blood donations and 24.37% of the non-donors don't know where to donate blood.

The challenges of blood donation and use in Nigeria led to the emergence of the National Blood Transfusion Service (NBTS) in 2005.

Seventeen centres of the NBTS are currently operational and are spread across the geo-political zones as follows: North-Central (2), North-East (3), North-West (4), South-East (1), South-West (4) and the South-South (3). Apart from the South-east zone with one NBTS centre, the North-central is one of the geographical zones with comparatively fewer number of NTBS centres with the expectation that the findings from this study may inform the need to increase the number of NBTS centres in the zone. More so, as poor knowledge gap on blood donation, if established, may serve as an impetus to drive that especially when one of the cardinal functions of the NBTS is to develop blood donor recruitment strategies nationwide. Even though a similar study has been done in Ilorin, there is the need to extend this study to other North-central states. Therefore, this study assessed the knowledge of blood donation among adults in two selected North Central States of Nigeria.

METHODOLOGY

Nigeria is Africa's most populous country with a population of more than 180 million (NPC, 2006 projection). She has over 370 ethnic groups spread around the country. The major indigenous languages are Yoruba, Igbo and Hausa/Fulani. However, English is the official language in the country. In addition to the human resource, Nigeria is endowed with a lot of other natural resources, the major ones being crude oil, bitumen and agricultural products.[10] It has 36 states including the Federal Capital Territory and 774 Local Government Areas. The States are divided broadly into six geopolitical zones; namely, North East (NE), North Central (NC), North West (NW), South East (SE), South South (SS) and South West (SW). The country is located on co-ordinates N 9.0820^{o}, E 8.6753^{o} and lies on Africa's West Coast and occupies 923,768 square kilometres of land bordering Niger, Chad, Cameroon and Benin. [10]

This study was conducted in the North central zone of Nigeria which comprises of Kwara, Kogi, Niger, Benue, Plateau, Nassarawa States and the Federal Capital Territory. The study design was descriptive cross-sectional conducted between August 2016 and January 2018. Fisher's formula for sample size determination was used to calculate the minimum sample size for the study[11]. A total of 1900 respondents was the minimum required for the study. However, 3104 respondents were involved in the study; this will, no doubt, further improves the external validity of the findings.

The study populations for this research work were adult males and females who were between 18 and 60 years living in the North Central Nigeria. Adults who had spent less than six months in the study areas, visitors to North central Nigeria during the study and adults who could not give reliable information on account of illness or disability were excluded from the study. A total of 3104 respondents were involved in the study. Multistage sampling technique was used in this study. In the first stage, two states out of the six states in the North Central zone of Nigeria were selected by simple random sampling technique. Secondly, in each of the selected states, two Local Government Areas (LGAs) were selected using simple random sampling by balloting. One urban and one rural LGA were picked from each state. Next, two political wards were picked from each LGA. A total 8 political wards were involved in the study. The selections were done by simple random sampling by balloting without replacement. In the fourth stage, two communities were selected by simple random sampling from each ward and a total of 16 communities were involved in the survey. Lastly, the grid method, which involves bottle

spinning to locate the centre of the community, was used. Using the direction of the tip of the spin bottle, the first house was selected and other houses were picked consecutively. Equal allocation of respondents was done to all communities selected. Where there were more than one eligible respondent in a household, the head or his designate in the household was selected.

The research tool was interviewer-administered questionnaire and trained research assistants (community health extension workers, public health nurses and resident doctors) were recruited for data collection. The questionnaire was divided into sections, which sought information on socio-demographic variables, knowledge of blood donation and voluntary donation of blood. The research tool was pretested in Osogbo, Osun State, south-west Nigeria. The feedbacks obtained from the field were used to edit and modify some questions in the questionnaire. This improved the validity of the data tool. All completed questionnaires were checked for accuracy and completeness, the data generated from the study were entered into the computer and subjected to appropriate statistical analysis using EPI INFO computer software package (version 3.5.3). Pearson Chi square (χ^2) was used to test statistical significance in cross tabulation variables.

Respondents' knowledge of voluntary blood donation was scored and graded. A correct answer was awarded a score of one, while an incorrect answer scored zero. The maximum score obtainable was 12. The knowledge was graded into poor (0-2) for respondents that got at most two correct answers; fair (3-5) for respondents that gave between three to five correct answers and good (6 and above) for those respondents that got more than five correct answers. Level of significance was set at $p < 0.05$. Ethical approval was obtained from the Ethical Review Committee of the University of Ilorin, Ilorin, Nigeria, before the commencement of the study. Written informed consent from selected respondents was duly completed and signed by all respondents before questionnaire administration and their privacy guaranteed. Participation was voluntary.

RESULTS

About half of the respondents 1380 (44.5%) were in the age group 20-29 years while the elderly (≥60 years) were the least among the respondents constituting 86 (2.8%). Two-thirds of them 2096 (67.5%) were males (Table 1). Almost two-thirds, 1966 (63.3%), of the respondents were Muslims and more than a third, 1134 (36.5%), of them practiced Christianity. More than a quarter, 229 (28.1%), were Traders/Farmers while Civil servants/Professionals made up less than a quarter, 186 (22.8%). Yoruba-speaking respondents were the highest constituting 1289 (41.5%). Igbo/Edo were the least common ethnic group constituting 85 (2.7%) of the total respondents.

More than three-quarters of the respondents 2663 (85.5%) were aware of blood donation exercise and the commonest source of information was the hospital workers 1505 (56.5%) (Table 2). The least common source of information on blood donation was Lecture/Seminar, 338 (12.7%). Also, in Table 2, two-thirds, 1170 (43.9%), referred to blood donation as the donation of blood willingly without remuneration; and two-thirds, 2085 (78.3%), of the respondents knew that blood donation could be made voluntarily. More than one third, 1111 (41.7%), had knowledge of commercial type of blood donation.

Majority, 2565 (96.3%), of the respondents knew that blood donation save lives. Other importance of blood donation given by the respondents included restoration of blood loss, 115 (4.3%); and helps to know one's blood

group, 12 (0.5%) among others. More than three-quarters, 2468 (92.7%), of the respondents knew where to go for voluntary blood donation. (Table 3)

More than half, 1407 (52.8%), of the respondents had fair knowledge of voluntary blood donation while more than one-third, 990 (37.2%), demonstrated good knowledge. As seen in Table 4, respondents in the sixth decade of life/older age group had the least proportion of respondents with good knowledge of blood transfusion compared with those in the younger age groups. This observed association between knowledge of transfusion and age group of respondents was found to be statistically significant ($p<0.001$). More than half, (53.4%), of the respondents who were civil servants/professionals had good knowledge of blood transfusion compared with just about a third among those who were students, artisans/drivers or traders/farmers. This observed association between occupation and knowledge of blood transfusion was found to be statistically significant ($p<0.001$). Also, respondents with tertiary education had good knowledge of blood transfusion compared with those who had lesser or no educational exposure; and this was also significant ($p<0.001$) Hausa/Fulani ethnic group had the least proportion of respondents with good knowledge of blood transfusion compared with other ethnic groups among the respondents. Yoruba ethnic group had the highest proportion of respondents with poor knowledge of blood transfusion. This observed association between ethnic group and knowledge of blood transfusion was found to be statistically significant ($p<0.001$).

DISCUSSION

This study was carried out to assess the knowledge of blood donation and determinants among respondents in North-central States of Kogi and Kwara, Nigeria with a view to identifying gaps in knowledge and make appropriate recommendations towards promoting voluntary blood donation practices among adults. The socio-demographic variables obtained from study showed that the youthful age of 20-29 years (44.5%) as the major age group of respondents. Other studies in Nigeria, [1, 2, 8, 12] Ethiopia [13] and Sri Lanka [14] also reported similar findings in the age of respondents. This perhaps could be due to the increasing population of youths not only in Nigeria but Africa in general. It was also reported that this age bracket constitute approximately 15% of the nation's population.[15] Males constituted 67.5% of the respondents and 56.9% of them are married.

In this study, the awareness of blood donation exercise was quite impressive with more than three-quarters affirmation. Majority (56.5%) of respondents in this study got their information on blood donation through health workers in the study area, however, more still need to be done regarding providing continuous education for our health professionals at all strata towards retaining the voluntary blood donors.

This study revealed that more than half (52.8%) of the respondents had fair knowledge while only about a third, demonstrated good knowledge of blood donation. This could be due to the fact that the majority of respondents (28.1%) in this study were traders/farmers compared to professionals in related studies.[6, 16] Given the high level of awareness, this finding on knowledge buttressed the fact that awareness does not necessarily translate to knowledge. A low level of knowledge on blood donation was also reported in another study in North-central, Nigeria which is also similar to a study conducted in South Western Nigeria where 80% of the respondents had poor knowledge of blood donation.[2, 12]

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (n=3104)	Percent
Age group (years)		
<20	187	6.0
20-29	1380	44.5
30-39	827	26.6
40-49	445	14.3
50-59	179	5.8
≥60	86	2.8
Sex		
Male	2096	67.5
Female	1008	32.5
Educational Level		
Primary	297	9.6
Secondary	1094	35.2
Tertiary	1376	44.3
Quranic	104	3.4
None	233	7.5
Marital Status		
Married	1767	56.9
Single	1299	41.9
Widowed	20	0.6
Divorce	8	0.3
Separated	10	0.3
Religion		
Islam	1966	63.3
Christianity	1134	36.5
Others	4	0.2
Occupation		
Trader/Farmer	229	28.1
Civil servants/Professionals	186	22.8
Artisan/Driver	172	21.1
Student	142	17.4
Unemployed/retired	70	8.6
Others	16	2.0
Ethnic group		
Yoruba	1289	41.5
Ebira/Bokobaru	679	21.9
Ibibio/Itsekiri/Ijaw	383	12.3
Nupe/Igala	318	10.2
Hausa/Fulani	190	6.1
Gbayi/Bassa	160	5.2
Igbo/Edo	85	2.7

This was contrary to an Indian study which revealed good knowledge (45.33%) about blood donation among the respondents. However, unlike this study, the Indian study did not find any significant relationship between age, ethnic group and literacy level with knowledge about blood donation.[6, 16] It should be noted that the Indian study, unlike this study, was carried out among health professionals which could account for the good knowledge recorded. The observed gap on knowledge of blood donation in most developing countries is an important factor and a reflection of poor sensitization and inadequate provision of appropriate information on blood donation practices. This information, if provided, can lead to positive attitudinal change; and may provide

Table 2: Knowledge of blood donation among respondents

Variable	Frequency	Percent
Awareness of blood donation exercise (n = 3104)		
Yes	2663	85.8
No	441	14.2
Source of information* (n=2663)		
Hospital worker	1505	56.5
Television	780	29.3
Radio	776	29.1
Friend	751	28.2
School	675	25.3
Family member	567	21.3
Lecture	338	12.7
Definition of blood donation* (n=2663)		
Donating blood willingly without remuneration	1170	43.9
Donating blood when someone needs it	970	36.4
Donating blood to replace one used for relation	218	8.2
Donating blood when money is given to the doctor	107	4.0
Types of blood donation* (n=2663)		
Voluntary	2085	78.3
Request	1642	61.7
Commercial	1111	41.7
Replacement	890	33.4
Periodic	356	13.4
Others**	73	2.7

** Multiple responses allowed; **Compassionate one-off donation during mass casualties and emergencies*

Table 3: Respondents' knowledge of importance of and location for blood donation

Variable	Frequency (n=2663)	Percent
Importance of blood donation		
To save lives	2565	96.3
Restore blood loss/ shortage	115	4.3
To help those in need	94	3.5
To restore health	44	1.7
Store in blood bank	16	0.6
Others	16	0.6
To know ones blood group	12	0.5
Avoid excess blood in the body	5	0.2
Surgical purpose	2	0.1
Don't know	67	2.5
Knowledge of where to go for blood donation		
Yes	2468	92.7
No	195	7.3
Places where blood can be donated* (n=2468)		
Hospital	2418	98.0
Voluntary blood donation campaign centre	181	7.3
Laboratory	165	6.7
Knowledge scores of voluntary blood donation		
Poor	266	10.0
Fair	1407	52.8
Good	990	37.2

***Multiple response**

Table 4: Respondents' socio-demographic variables and knowledge of blood transfusion

Variables	Knowledge				
	Poor n (%)	Fair n (%)	Good n (%)	χ^2	p value
Age group (years)					
<20	32 (17.1)	110 (58.8)	45 (24.1)		
20-39	228 (10.3)	1141 (51.7)	838 (38.0)		
40-59	47 (7.5)	325 (52.1)	252 (40.4)		
≥60	4 (4.7)	64 (74.4)	18 (20.9)	42.256	<0.001*
Sex					
Male	211 (10.1)	1100 (52.5)	785 (37.5)		
Female	100 (9.9)	540 (53.6)	368 (36.5)	0.331	0.847
Educational Level					
Primary	45 (15.2)	201 (67.7)	51 (17.2)		
Secondary	117 (10.7)	631 (57.7)	346 (31.1)		
Tertiary	69 (5.0)	605 (44.0)	702 (51.0)		
Quranic	25 (24.0)	59 (56.7)	20 (19.2)		
None	55 (23.6)	144 (61.8)	34 (14.6)	300.361	<0.001*
Marital status					
Married	182 (10.3)	954 (54.0)	631 (35.7)		
Single	126 (9.7)	664 (51.1)	509 (39.2)		
Widowed	2 (10.0)	14 (70.0)	4 (20.0)		
Divorce/separated	1 (6.0)	8 (44.4)	9 (50.0)	7.973^Y	0.2401
Religion					
Islam	225 (11.4)	1098 (55.8)	643 (32.7)		
Christianity	86 (7.6)	538 (47.4)	510 (45.0		
Others	0 (0.0)	4 (100.0)	0 (0.0)	50.179^Y	<0.001*
Occupation					
Student	70 (9.2)	391 (51.7)	296 (39.1)		
Artisan/Driver	103 (51.8)	353 (54.1)	196 (30.1)		
Trader/Farmer	87 (12.2)	409 (57.1)	220 (30.7)		
Civil servants/Professionals	16 (2.5)	288 (44.2)	348 (53.4)		
Unemployed/retired	35 (11.9)	179 (60.9)	80 (27.2)		
Others	0 (0.0)	20 (60.6)	13 (39.4)	154.782	<0.001*
Ethnic group					
Yoruba	155 (12.0)	718 (55.7)	416 (32.3)		
Igbo/Edo	5 (5.9)	42 (49.4)	38 (44.7)		
Hausa/Fulani	15 (7.9)	103 (54.2)	72 (27.9)		
Ebira/Bokobaru	63 (9.3)	363 (53.5)	253 (37.3)		
Gbayi/Bassa	18 (11.3)	79 (49.4)	63 (39.4)		
Nupe/Igala	20 (6.3)	129 (40.6)	169 (53.1)		
Ibibio/Itsekiri/Ijaw	35 (9.1)	206 (53.8)	142 (37.1)	56.315	<0.001*

χ^2: Chi square; *: p value <0.05 (i.e. statistically significant); Y: Yates corrected chi square

opportunity for informed decision on voluntary blood donation among the general public.[2] Most of the respondents in this study defined blood donation as donating blood willingly without remuneration and donating blood when someone needs it. Majority of respondents in this study had tertiary education (44.3%) perhaps because of the two selected study states as the performance indicators in these states (Kwara and Kogi) showed that there are many literate men and women.[17] Education is a vital tool towards changing the orientation and views of a society and it would to a large extent, reduce the apathy towards voluntary blood donation.

In conclusion, less than half of respondents had good knowledge of voluntary blood donation and there was a statistically significant association between occupation

and knowledge of blood donation as more artisans had poor knowledge compared with civil servants and students It is recommended that periodic awareness program on voluntary blood donation in rural and urban areas across Nigeria is needed. In addition, sensitization of the informal sector on the significance of non-remunerated voluntary blood donation should be given priority.

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