

KNOWLEDGE, ATTITUDE AND PRACTICE OF VOLUNTARY NON-REMUNERATED BLOOD DONATION AMONG MEDICAL STUDENTS IN A TERTIARY INSTITUTION IN SOUTHERN NIGERIA

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ABSTRACT

Background: Internationally, voluntary non-remunerated blood is considered safe. However, paid donors account for more than 90% of donated blood in Nigeria. Paid blood donors constitute a group with high-risk behaviour leading to greater chances of transfusion-transmitted infections in the recipients.

The objective of the study was to assess the knowledge, attitude and practice of voluntary non-remunerated blood donation amongst medical students of University of Benin, Benin City. The study utilized a descriptive cross sectional design. Respondents were selected using a stratified sampling technique. Data was analyzed using IBM SPSS version 20.0 software. Associations were determined using fisher's exact test and level of significance was set at $p < 0.05$.

A total of 220 respondents with mean age (S.D) of 26.2 (3.0) years participated in the study. Majority, 189 (85.9%) had good knowledge of voluntary non-remunerated blood donors. Most, 193 (87.7%) respondents had a positive attitude towards blood donation however, 25 (11.4%) had ever donated blood and actual voluntary non-remunerated blood donation was reported by only 21 (9.5%). Increasing age and male gender were associated with actual blood donation ($p < 0.05$).

Conclusion: Knowledge of voluntary non-remunerated blood donors among the studied population was good however, the practice was poor. Special awareness programmes are needed to transform this positive attitude to actual practice.

INTRODUCTION

Blood is considered a national resource and as such, it is the responsibility of every country to ensure that blood reserves are sufficient and safe. Blood donation is an important area of global health and an example of genuine altruism.¹⁻⁴ The importance of blood and blood donation

cannot be overemphasized, hence it was central to the WHO theme for the year 2000.⁵

Blood donors fall into three groups – Voluntary Non-Remunerated Donors (VNRBD), Family/replacement donors and Paid donors.¹⁻³ Although non-remuneration particularly excludes financial reward, donor appreciation /incentives by the giving of tokens, certificates, badges, one or more days off work and direct transport expense refunds are acceptable.^{3,6} An adequate and reliable supply of safe blood can be assured by a stable base of regular, voluntary, non-remunerated blood donors. The goal of WHO is that all

KEYWORDS: *Voluntary, Non-Remunerated, Blood donation, Nigeria*

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countries should obtain blood supplies from voluntary unpaid donors by 2020.^{1,2} These donors are the safest group of donors as the prevalence of blood borne infections is lowest among this group.^{1,2,3,7} As such, WHO in collaboration with other international organizations sponsors World Blood Donor Day (WBDD), a yearly event held on 14 June. This event, which is celebrated around the world, is designed to create wider awareness on the importance of voluntary non-remunerated blood donation and encourage more people to donate blood regularly.

The need for blood and blood products is rising in all parts of the world. About 97 - 107 million units of blood donations are collected globally every year.^{8,9} However, nearly 50% of these blood donations are collected in high-income countries, home to only 15% of the world's population.^{8,9} At Nigeria's current level of health care delivery, it is estimated that about 1.5 million units of blood would be required annually.³ However, a National Blood transfusion baseline survey in 2005 showed that only about half a million units of blood were collected in the previous one (1) year with paid donors accounting for more than 90% of blood donated.^{3,10} The survey further revealed that in the public sector, 25% and 75% respectively were commercial (paid) and replacement donors whilst voluntary non-remunerated donors were negligible. In the private sector, the reverse was obtained with 75% and 25% respectively being commercial and replacement donors whilst voluntary non-remunerated donors were insignificant.¹⁰ These findings are similar to studies carried out in various parts of the country.¹¹⁻¹³ This is worsened by the statistics that people already infected with HIV through unsafe blood

transfusion in Nigeria accounts for the second largest source of HIV infection among infected individuals.³ In addition, the knowledge of blood donation and blood donor recruitment criteria is critically low in the general population and there is a gross misconception and poor attitude towards voluntary non-remunerated blood donation in the general public.¹⁴⁻¹⁶

Students constitute an important part of the literate society worldwide. It has been shown that university students compared to the general population have a high level of knowledge and a more positive attitude towards blood donation.⁴ Medical students are the future doctors of the country and are in a strategic position to enlighten and serve as role models to the general population as regards blood donation. The objective of this study was therefore to assess the knowledge, attitude and practice of voluntary non-remunerated blood donation amongst medical students of the University of Benin, Benin City, Nigeria.

MATERIALS AND METHODS

This study was carried in the University of Benin, Ugbowo campus, Benin City, Nigeria. University of Benin is one of the federal tertiary institutions in the south-south geopolitical region of the country. The study utilized a cross-sectional descriptive design and was carried out over a period of four months from January to April, 2012. The study population comprised students from the School of Medicine of the College of Medical Sciences. At 400 Level, a course in Haematology and Blood transfusion is offered as part of the curriculum for clinical students thus, medical students in pre-clinical class (100 – 300 Levels) were excluded from the study to prevent

bias. Using the proportion of medical students willing to voluntarily donate blood in a similar study (88%)¹⁷, a minimum sample size of 163 was calculated using the appropriate formulae for a descriptive study¹⁸. The respondents were selected using stratified sampling technique. The respondents' level of study formed the basis of each stratum. Sampling frame for the study was 556 (comprising 159, 172 and 225 students in 400, 500 and 600 level respectively). Proportional allocation was used to select the number of students required to partake in the study from each level. At each level, systematic sampling was used to select the respondents. The first respondent was selected using simple random sampling and thereafter, every third respondent was selected and invited to participate in the study.

Data was collected using a structured pre-tested interviewer-administered questionnaire comprising both open and closed ended questions and consisting of 4 sections. Section A comprised the socio-demographic characteristics of the respondents, section B consisted of questions that assessed respondents knowledge of VNRBD, section C consisted of questions that assessed respondents' attitude towards and motivational factors for blood donation and section D comprised questions that sought to assess the practice of blood donation. The questionnaires were screened for completeness, coded, entered into the IBM SPSS version 20.0 software and analysed.

Religion of respondents was grouped as Christianity, Islam, Jehovah's Witness and others which included African Traditional Religion (ATR) and Eckankar. Jehovah's witnesses were grouped separately from Christians because of

their doctrine as regards blood donation. Knowledge of respondents was evaluated based on the definition of VNRBD and WHO guidelines on assessing donor suitability for blood donation.¹⁹ A total of 10 questions was used to assess knowledge. A score of 1 was awarded for a correct answer and 0 for a wrong answer, giving a range of 0 to 10. Scores were converted to percentages and graded as poor knowledge (scores 49.9% and below), fair knowledge (scores between 50.0 to 69.9%) and good knowledge (scores 70.0% and above). Ten questions were also used to assess attitude towards VNRBD using a 3-point likert scale giving a total minimum score of 10 and maximum score of 30. The total attitude score was gotten and converted to percentages and graded as negative attitude (scores 49.9% and below), and positive attitude (scores 50.0% and above). Cronbach's Alpha was used to assess the internal consistency and reliability of the scoring tools. A score of 0.82 and 0.70 was obtained for knowledge and attitude questions respectively, showing good reliability. Test of associations were carried out using the Fisher's exact test and binary logistic regression was used to further determine significant predictors of the outcome variables (knowledge, attitude and practice). The level of significance was set at $p < 0.05$. Frequency tables were used to present the results.

Written informed consent was obtained from respondents. In order to ensure confidentiality, serial numbers rather than names were used to identify the respondents. Respondents were informed that they had the right to decline participation or to withdraw from the study at any time they wished. Respondents were also informed that

there were no penalties or loss of benefits for refusal to participate in the study or withdrawal from it. All data was kept secure and made available to only members of the research team.

RESULTS

A total of 220 clinical medical students participated in this study. The mean age (S.D) was 26.16 (3.0) years. A higher proportion of the respondents 144 (65.5%) were within the age group of 25-29 years. About two thirds 140 (63.6%) of the respondents were male with a male : female ratio of 1:0.6. Most, 212 (96.4%) and 204 (92.7%) of the respondents were single and Christians, respectively. Six (2.7%) of the respondents were Jehovah's witnesses. Other religions, 5 (2.3%) included African Traditional Religion and Eckankar (Table 1).

All the respondents were aware of blood donation however, 189 (85.9%) had heard of Voluntary Non Remunerated Blood Donation (VNRBD). Of the 189 respondents who had heard of VNRBD, 140 (74.1%) had sourced their information on VNRBD from lectures, media constituted 83 (43.9%), schoolmates 29 (15.3%), parents 6 (3.2%), friends 5 (2.6%) and internet 2 (1.1%) Majority, 164 (86.8%) of the respondents had good knowledge of VNRBD and donor suitability for blood donation while 17 (9.0%) had poor knowledge. Good knowledge increased with increasing age ($p = 0.585$), and regression analysis revealed with a year increase in age, the odds of having good knowledge increased by 1.022 (CI = 0.524 – 1.994). (Table 2 and 6a respectively). Good knowledge was higher among the males ($p = 0.016$). Being male increased the odds of having good knowledge by 2.939 (CI = 1.450-5.957, $p = 0.003$) corroborating the

bivariate findings. (Table 2 and 6a respectively). Also, good knowledge was higher among the married respondents ($p = 0.999$). Not being married decreased good knowledge by 0.749. This was more likely by an odds of 0.473 (CI = 0.053- 4.024, $p = 0.501$) (Table 2 and 6a respectively). Knowledge was also higher among the respondents in 500L class ($p = 0.578$) (Table 2). All Muslims, Jehovah's witnesses and respondents with other religions had good knowledge of VNRBD ($p = 0.999$). Not being a Jehovah's Witness decreased knowledge by 0.082. This was more likely by an odds of 0.921 (CI = 0.098 – 8.697, $p = 0.943$) (Table 2 and 6a respectively).

Most respondents, 193 (87.7%) had a positive attitude towards blood donation while 27 (12.3%) had a negative attitude towards VNRBD. Positive attitude was highest among age group 30 - 34 years, 14 (93.3%). Association between age group and attitude was not statistically significant ($p = 2.208$). Logistic regression revealed that positive attitude decreased with decreasing age group ($p = 0.423$). Males, 127 (90.7%) had a positive attitude towards VNRBD than females ($p = 0.162$) (Table 3). This association became significant after controlling for confounders (CI = 1.189 – 8.204, $p = 0.021$) (Table 6). Positive attitude was also found to be highest among the 500L students 64 (94.1%) as compared to 600L 78 (87.6%) and 400L 51 (81.0%), respectively. This association was statistically significant ($p = 0.029$) (Table 3). Logistic regression revealed that positive attitude increased with increasing level of study, though this was not statistically significant ($p = 0.014$) (Table 6b). All Muslims had a positive attitude towards VNRBD while Jehovah's witnesses 1 (16.7%) had the least positive attitude towards VNRBD. Association between religion and attitude towards

TABLE I: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

| VARIABLE | FREQUENCY (n=220) | PERCENT |
|-------------------------------------|----------------------|---------|
| Age (years) | | |
| ≤24 | 58 | 26.4 |
| 25-29 | 144 | 65.5 |
| 30-34 | 15 | 6.8 |
| ≥35 | 3 | 1.3 |
| Sex | | |
| Female | 80 | 36.4 |
| Male | 140 | 63.6 |
| Level | | |
| 400L | 63 | 28.6 |
| 500L | 68 | 30.9 |
| 600L | 89 | 40.5 |
| Marital Status | | |
| Single | 212 | 96.4 |
| Married | 8 | 3.6 |
| Religion | | |
| Christian | 204 | 92.7 |
| Jehovah's witness | 6 | 2.7 |
| Islam | 5 | 2.3 |
| Others | 5 | 2.3 |
| Mean age (SD) in years =26.16 (3.0) | | |
| Age range = 21 – 41 years | | |

TABLE II: SOCIO-DEMOGRAPHICS AND KNOWLEDGE OF VNRBD

| VARIABLE | KNOWLEDGE OF VNRBD (n = 189) | | | FISHERS EXACT VALUE | P-VALUE |
|--------------------------|------------------------------|---------------------|----------------------|---------------------|---------|
| | GOOD (%) (n = 164) | FAIR (%) (n = 8) | POOR (%) (n = 17) | | |
| Age group (years) | | | | | |
| <24 | 40 (81.6) | 2 (4.1) | 7 (14.3) | 4.272 | 0.585 |
| 25-29 | 111 (88.1) | 5 (4.0) | 10 (7.9) | | |
| 30-34 | 10 (90.9) | 1 (9.1) | 0 (0.0) | | |
| >35 | 3 (100.0) | 0 (0.0) | 0 (0.0) | | |
| Sex | | | | | |
| Male | 114 (91.2) | 5 (4.0) | 6 (4.8) | 7.716 | *0.016 |
| Female | 50 (78.1) | 3 (4.7) | 11 (17.2) | | |
| Marital Status | | | | | |
| Single | 157 (86.3) | 8 (4.4) | 17 (9.3) | 0.242 | 0.999 |
| Married | 7 (100.0) | 0 (0.0) | 0 (0.0) | | |
| Level | | | | | |
| 400L | 49 (86.0) | 2 (3.5) | 6 (10.5) | 2.907 | 0.578 |
| 500L | 49 (92.5) | 2 (3.8) | 2 (3.8) | | |
| 600L | 66 (83.5) | 4 (5.1) | 9 (11.4) | | |
| Religion | | | | | |
| Christian | 151 (85.8) | 8 (12.3) | 17 (9.7) | 1.439 | 0.999 |
| Jehovah's witness | 5 (100.0) | 0 (0.0) | 0 (0.0) | | |
| Islam | 5 (100.0) | 0 (0.0) | 0 (0.0) | | |
| Others | 3 (100.0) | 0 (0.0) | 0 (0.0) | | |

TABLE III: SOCIO-DEMOGRAPHICS AND ATTITUDE TOWARDS OF VNRBD

| VARIABLE | ATTITUDE TOWARDS VNRBD (n = 220) | | FISHERS EXACT VALUE | P-VALUE |
|--------------------------|-------------------------------------|----------------------|------------------------|---------|
| | POSITIVE (n = 193) | NEGATIVE (n = 27) | | |
| Age group (years) | | | | |
| <24 | 52 (89.7) | 6 (10.3) | 2.208 | 0.492 |
| 25-29 | 125 (86.8) | 19 (13.2) | | |
| 30-34 | 14 (93.3) | 1 (6.7) | | |
| >35 | 2(66.7) | 1 (33.3) | | |
| Sex | | | | |
| Male | 127 (90.7) | 13 (9.3) | 3.191 | 0.089 |
| Female | 66 (82.5) | 14 (17.5) | | |
| Marital Status | | | | |
| Single | 186 (87.7) | 26 (12.3) | 0.000 | 0.999 |
| Married | 7 (87.5) | 1 (12.5) | | |
| Level | | | | |
| 400L | 51 (81.0) | 12 (19.0) | 5.234 | 0.071 |
| 500L | 64 (94.1) | 4 (5.9) | | |
| 600L | 78 (87.6) | 11 (12.4) | | |
| Religion | | | | |
| Christian | 183 (89.7) | 21 (10.3) | 17.999 | <0.001 |
| Jehovah's witness | 1 (16.7) | 5 (83.3) | | |
| Islam | 5 (100.0) | 0 (0.0) | | |
| Others | 4 (80.0) | 1 (20.0) | | |

TABLE IV: PRACTICE OF BLOOD DONATION

| VARIABLE | FREQUENCY | PERCENT |
|--|-----------|---------|
| Ever donated blood (n=220) | | |
| Yes | 25 | 11.4 |
| No | 195 | 88.6 |
| Number of times (n=25) | | |
| 1 | 20 | 80.0 |
| 2 | 4 | 16.0 |
| 3 | 1 | 4.0 |
| Blood donation in the past 1 year (n=25) | | |
| Yes | 3 | 12.0 |
| No | 22 | 88.0 |
| Practice of VNRBD (n=25) | | |
| Yes | 21 | 84.0 |
| No | 4 | 16.0 |
| Other reasons for donating blood (n=4)* | | |
| Family/ replacement donation | 2 | 28.6 |
| To know blood parameters | 5 | 71.4 |
| Reasons for not donating blood | | |
| Never thought about it | 78 | 40.4 |
| Lack of time | 63 | 32.6 |
| Family member not in need | 36 | 18.7 |
| Fear of post donation syncope | 28 | 14.5 |
| Low PCV | 27 | 14.0 |
| Fear of HIV screening | 10 | 5.2 |
| Lack of trust for blood donating centers | 9 | 4.7 |
| Religious reasons | 7 | 3.6 |
| Insufficient Knowledge | 7 | 3.6 |
| Others* | 4 | 2.1 |
| Recommendation on motivational factors for blood donation | | |
| Issuance of certificates | 181 | 92.8 |
| Free signatures | 172 | 88.2 |
| Adequate information on VNRBD | 107 | 54.8 |

*multiple responses

TABLE V: SOCIO-DEMOGRAPHIC DEMOGRAPHIC VARIABLES AND EVER DONATION OF BLOOD

| VARIABLE | EVER DONATED BLOOD | | FISHERS EXACT VALUE | P-VALUE |
|-------------------------------|--------------------|------------|---------------------|---------|
| | YES (%) | NO (%) | | |
| Age group (years) | | | | |
| <24 | 2 (3.4) | 56 (96.6) | 11.605 | 0.006 |
| 25-29 | 18 (12.5) | 126 (87.5) | | |
| 30-34 | 3 (20.0) | 12 (80.0) | | |
| >35 | 2 (66.7) | 1 (33.3) | | |
| Sex | | | | |
| Male | 21 (15.0) | 119 (85.0) | 5.054 | 0.027 |
| Female | 4 (5.0) | 76 (95.0) | | |
| Marital Status | | | | |
| Single | 22 (10.4) | 190 (89.6) | 3.880 | 0.050 |
| Married | 3 (37.5) | 5 (62.5) | | |
| Level | | | | |
| 400L | 4 (20.0) | 59 (93.7) | 2.496 | 0.279 |
| 500L | 8 (54.5) | 60 (88.2) | | |
| 600L | 13 (54.9) | 76 (85.4) | | |
| Religion | | | | |
| Christian | 25 (12.3) | 179 (87.7) | 0.445 | 0.999 |
| Jehovah's witness | 0 (0.0) | 6 (100.0) | | |
| Muslim | 0 (0.0) | 5 (100.0) | | |
| Others | 0 (0.0) | 5 (100.0) | | |
| Attitude towards VNRBD | | | | |
| Positive | 24 (12.4) | 169 (87.6) | 1.793 | 0.219 |
| Negative | 1 (3.7) | 26 (96.3) | | |

TABLE VI: LOGISTIC REGRESSION MODEL FOR DETERMINANTS OF KNOWLEDGE, ATTITUDE AND PRACTICE

| Outcome | Predictors | B (regression co-efficient) | Odds ratio | 95% CI for OR | | P - value |
|---|-----------------------|-----------------------------|------------|---------------|---------|-----------|
| | | | | Lower | Upper | |
| KNOWLEDGE | | | | | | |
| | Age | 0.022 | 1.022 | 0.524 | 1.994 | 0.949 |
| | Sex | | | | | |
| | Male | 1.078 | 2.939 | 1.453 | 5.597 | *0.003 |
| | Female** | | 1 | | | |
| | Marital status | | | | | |
| | Single | -0.749 | 0.473 | 0.053 | 4.204 | 0.502 |
| | Married** | | 1 | | | |
| | Level of study | -0.135 | 0.874 | 0.563 | 1.358 | 0.549 |
| | Religion | | | | | |
| | Other Religions | -0.082 | 0.921 | 0.098 | 8.697 | 0.943 |
| | Jehovah's witness** | | 1 | | | |
| *Significant, **Reference category, R² = 8.2% - 12.1%, CI = Confidence Interval | | | | | | |
| ATTITUDE | | | | | | |
| | Age | -0.332 | 0.717 | 0.317 | 1.662 | 0.425 |
| | Sex | | | | | |
| | Male | 1.139 | 3.123 | 1.189 | 8.204 | *0.021 |
| | Female** | | 1 | | | |
| | Marital status | | | | | |
| | Single | 0.098 | 1.103 | 0.121 | 10.040 | 0.930 |
| | Married** | | 1 | | | |
| | Level of study | 0.236 | 1.266 | 0.716 | 2.238 | 0.417 |
| | Religion | | | | | |
| | Other Religions | 3.972 | 53.107 | 5.450 | 517.510 | *0.001 |
| | Jehovah's witness** | | 1 | | | |
| *Significant, **Reference category, R² = 9.9% - 18.8%, CI = Confidence Interval | | | | | | |
| PRACTICE | | | | | | |
| | Age | 0.918 | 2.503 | 1.119 | 5.599 | *0.025 |
| | Sex | | | | | |
| | Male | 0.876 | 2.402 | 0.743 | 7.763 | 0.143 |
| | Female** | | 1 | | | |
| | Marital status | | | | | |
| | Single | -1.274 | 0.287 | 0.056 | 1.479 | 0.136 |
| | Married** | | 1 | | | |
| | Level of study | 0.228 | 1.256 | 0.709 | 2.224 | 0.435 |
| *Significant, **Reference category, R² = 7.8% - 15.3%, CI = Confidence Interval | | | | | | |

VNRBD was statistically significant ($p < 0.001$). (Table 7) Logistic regression revealed that other religions were 53.107 times more likely to have a positive attitude compared to with the reference category (Jehovah's Witness) (CI 5.450 – 517.510, $p = 0.001$) (Table 6b). A higher proportion of respondents with positive attitude towards blood donation 24 (12.4%) had ever donated blood, compared with those with a fair attitude 1 (5.6%). No respondent with a negative attitude donated blood. Association between respondents' attitude and ever donation of blood was not statistically significant ($p = 0.678$) (Table 3).

Pertaining to practice, majority, 195 (88.6%) of the respondents had never donated blood while only 25 (11.4%) had donated blood previously. Of those who had ever donated blood, most 20 (80%) had donated blood only once while 4 (16%) and 1 (4%) had donated blood twice and thrice respectively. Practice of VNRBD was 21 (84%) among the blood donors. Other reasons for donating blood included the fact that donating blood afforded them the opportunity to know their blood parameters and a need for blood transfusion by family members. None of the respondents who had donated blood did so for remuneration (Table 4). Donation of blood increased with increasing age, with respondents 35 years and above, 2 (66.7%) having the highest proportion of respondents who had ever donated blood. Respondents 24 years and below had the least proportion of respondents who had ever donated blood. Association between age and ever donation of blood was statistically significant ($p = 0.006$) (Table 5). This significance was maintained after controlling for confounders ($p = 0.025$) (Table 6). A higher proportion of males 21 (15.0%) had donated blood compared

with females 4 (5.0%). Association between sex and ever donation of blood was statistically significant ($p = 0.027$) (Table 5). Logistic regression revealed that males were 0.876 times more likely to donate blood in comparison with females. This significance was however lost after controlling for confounders ($p = 0.143$) (Table 6). A higher proportion of married respondents 3 (37.5%) had donated blood compared with single respondents. Association between marital status and ever donation of blood was not statistically significant ($p = 0.050$) (Table 5). Blood donation increased with increasing level of study however, this association was not statistically significant ($p = 0.279$). Only Christians, 25 (12.3%) had ever donated blood. Association between religion and ever donation of blood was not statistically significant ($p = 0.999$) (Table 5).

The common reasons for not donating blood among the non-donors were that they never thought of it, 78 (40.4%), lack of time 63 (32.6%) and family member not in need 36 (18.7%) (Table 4). The commonest motivational factor cited by the respondents who had never donated blood, that could make them donate blood was adequate information about blood donation 95 (49.2%), free signatures for procedures and issuance of certificate amounted to 30 (15.6%) and 21 (10.9%) respectively. Forty students (20.7%) gave no response.

DISCUSSION

Almost two-third of the respondents were between 25 – 29 years, with a mean age (SD) of 26.16 (3.0) years. Mean age of respondents in this study is higher than that of a similar study conducted in India¹⁷. Perhaps the reason for this may be that the age at entry into tertiary institutions is higher in this country than

in India. The finding of more males than females in this study is not surprising as it is common knowledge that conventionally, more males venture into the medical profession than females. This may be due to the long period of study in medical school viz-a viz the age at which they intend to settle down and have a family. It is thus not surprising to find married respondents in medical school. This was however not the case in India¹⁷ where more females than males were recorded. Majority of the respondents were Christians, the religion dominated by the southern part of the country. Jehovah's Witness, though Christians preach a doctrine which is against blood transfusion, hence their exclusion from the Christian sect for the purpose of this study.

Maintaining an adequate and safe blood supply is an issue of concern to the health workforce especially with the increase in demand for blood and blood products, hence good knowledge on VNRBD is necessary. In this study, knowledge of respondents on VNRBD was good. This was higher than knowledge level observed in other studies.^{4,15,17,20}. This may be because students who had received lectures in Haematology and blood transfusion were the unit of enquiry for this study and so exposure to such lectures may have improved their knowledge. Good knowledge will likely bring about a positive attitude and eliminate fear associated with blood donation. Good knowledge on blood donation and its complications which include the transmission of infection will bring about better and safer practices of blood donation and its use.

Results also showed that age and level of study did not significantly affect knowledge; however males were about 2.939 times more likely to have good

knowledge than females. This is dissimilar to findings in another study where the reverse was the case.¹⁷ More males having good knowledge of blood transfusion will go a long way in improving chances of life style changes in risk factors that will ensure safe blood donation. As males are more likely to adopt life style practices that does not favour blood donation, hence good knowledge is expected to influence life style positively. In addition, more males will practice the medical profession than females due to family reasons. Good knowledge will help to strengthen their practices of safe blood donation.

Majority of the respondents had a positive attitude towards VNRBD and this was similar to findings from other studies.^{4,15,17-21}. This is expected considering that the study was carried out among medical students who have been taught on the lifesaving benefit of blood donation. It is therefore expected that good knowledge should bring about good attitude. Medical students will be future medical professionals who will eventually be the ones to request and utilize blood for the management of conditions where blood may be needed. Hence having positive attitude towards blood donation will translate to improved availability of voluntary blood donors among medical students.

Determinants of positive attitude were sex and religion of respondents. Males were 3.123 times more likely to have a positive attitude towards blood donation than females. Other religions were 53.107 times more likely to have a positive attitude than Jehovah's witnesses. This is not surprising as their religion teaches them to have an aversion for blood donation and use. This negative attitude stemming from their belief may result in preventable death among these religious

subsets and their relatives and even among patients who they will manage as management options are guided by many factors, which may include the health workers preference.

Only about one in ten respondents had ever donated blood. This poor practice has been recorded in other studies.^{16,17,20} It is expected that with good knowledge and positive attitude, the practice should also be good. This then suggests that actual practice of blood donation goes beyond a positive attitude to a deeper conviction to save a life, hence it has been described as altruistic. Young persons are the most potential blood donors in every society and students constitute a huge proportion of them. This potential donors should therefore be well harnessed by sensitization and continued health education using appropriate behaviour change communication models to translate positive attitudes at actual practice.

This study also revealed that the reluctance to donate blood was more among the female students. This is an affirmation of the WHO report⁹ that there are more male donors and in contrast to the findings of a study in Lithuania where majority of VNRBD were females.⁸ Understandably, females have a lower packed cell volume at certain times of the months due to menstrual flow, it may therefore not be surprising that females have more reluctance to donate blood. Considering that more females are venturing into the medical profession, the practice of blood donation should be encouraged among females lending credence to the fact that anybody, irrespective of gender, can save lives.

Majority of the students who had ever donated blood practiced VNRBD. This may be due to their close proximity to the hospital and patients who require donations, during their course of study. This finding therefore buttresses the fact

that voluntary blood donation can effectively be practiced among medical students with the right amount of sensitization and motivation. Of note was that no respondent practicing blood donation was a paid donor. This finding is laudable and should be encouraged. Payment as a motivation for blood transfusion may predispose to donation of unsafe blood, as the donors may not give true information on life style attitude that do not favour blood transfusion. This may lead to transmission of infectious diseases and its untold consequences.

Majority of those who practiced blood donation had donated blood only once. This finding is similar to other studies.^{17,20} Globally, it has been found that 80% of first time donors every year give up the practice of blood donation.²² Reasons for fatigue after first donation should be sought in other studies. Reasons given for not donating blood among respondents who had never donated were similar to other studies.^{4,15,20} This may imply that continuous enlightenment is needed among this studied group and indeed, among the general population to highlight the importance of blood donation, especially VNRBD through various channels of communication.

CONCLUSION

Knowledge and attitude of VNRBD among the studied group was good. Practice of VNRBD was however poor. Among those who practiced blood donation, a higher proportion was voluntary non remunerated blood donors. This thus implies that if adequate information and enlightenment campaigns are intensified, the proportion of VNRB donors will improve in fulfilment of the WHO goal. Information on the benefits of VNRBD should be emphasized on a continuous basis during the medical training. Incentives such as issuance of certificates, badges and free medical check-ups are exploratory options to improve practice.

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