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ORIGINAL ARTICLE

Prevalence of hepatitis B and C, knowledge and attitude towards voluntary blood donation among secondary school teachers in Calabar, Nigeria

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Abstract

Introduction: Blood for transfusion or biopharmaceutical medication is obtained through blood donation. It is an indispensable component of health that contributes to saving lives since blood/blood products are unique. A major source of safe blood is voluntary non-remunerated blood donors. Considering the role of teachers in the education of young people in the populace, this study aims to provide information on knowledge and attitude toward blood donation and the prevalence of Hepatitis B and C among secondary school teachers in Calabar, Nigeria.

Methods: With ethical approval and informed consent obtained, a total of 200 apparently healthy teachers and staff were recruited from five secondary schools in Calabar. Structured questionnaires were pre-tested among twenty (20) staff of the University of Calabar before being administered to the study subjects. Blood was collected and screened for the presence of hepatitis B and C using the standard strip method. Data obtained were analyzed using the Chi-square test on SPSS version 21 and $p<0.05$ was considered statistically significant.

Results: The study subjects comprised males (49.5%) and females (50.5%) with 38% being between the ages of 27-37 years. The majority (67.5%) had attained tertiary education while the remaining 32.5% had secondary education. The prevalence of Hepatitis B and C was observed to be 10% and 4% respectively among the study population and this is comparable to the prevalence in the general population. Ninety-five percent of participants think voluntary blood donation is good with 100% affirming that it is important yet only 10% had actually donated blood; eight percent had received blood transfusion previously. A good number (87% and 65%) were willing to donate for a family member and for a stranger in case of emergency. Eighty-four and a half percent of respondents think that

blood donation is beneficial, 78% think there is a lack of awareness while 70% would advise others to donate blood voluntarily. Of the 200 participants, 66% believe blood donation to be a civic duty yet 82% and 85.5% respectively were of the opinion that blood donors should be paid or given gifts; indeed 83% agreed they would donate blood if they are paid. None of the respondents were against blood donation however 13% believed it poses a risk of collapse or death to the donor.

Conclusions: This study has shown that the prevalence of Hepatitis B and C among secondary school teachers in Calabar is 10% and 4% respectively. Secondary school teachers in the study area have fair knowledge of blood donation, and agree that it is important but are not willing to donate without renumeration. Lack of voluntary non-renumerated blood donation leads to a shortage of safe blood for transfusion and will promote commercial donation with associated risks. There is a need for regular awareness campaigns and blood drives among the populace.

Key words: Hepatitis B and C, Knowledge, Attitude, Voluntary Blood donation, Secondary school teachers

Introduction

The theme of the 2023 World Blood Donor Day "Give blood, give plasma, share life, share often" focuses on the idea that every single person can donate blood or plasma on a regular basis in order to create a safe and sustainable supply of blood and blood products to ensure availability so that timely transfusion can be provided for those in need (1). The requirement of blood and blood products in a country depends on the population, health care structure, prevalence of conditions requiring regular transfusions such as haemophilia and thalassaemia, availability of surgical centers using modern sophisticated techniques, and awareness amongst clinicians regarding judicious use of blood (2). According to the World Health Organization, the rate of blood donations is 5-6.6 donations per 1000 persons for lower to middle-income countries and an increase in the number of voluntary unpaid blood donors has been reported in recent times, yet this number still falls short of the required minimum of 1% of the population that is needed to meet the basic requirement of blood, especially in low-income countries (1). The transfusion of blood and blood products helps to save millions of lives. The gift of blood is the gift of life, there is no substitute for human blood. Transfusion services depend on three main categories of blood donors which include voluntary non-remunerated blood donors who donate blood without any payment, family donors who donate blood for their friends and relatives and paid donors who donate blood on remuneration. The WHO's goal is to obtain blood supplies entirely from voluntary unpaid donors. A major source of safe blood is voluntary non-remunerated blood donors because paid donors may have high-risk behavior leading to greater chances of transfusion-transmitted infections and also the family donors when under pressure may hide their high-risk behavior and illnesses. However, the recruitment of voluntary, non-remunerated blood donors poses major challenges to transfusion services throughout the world, particularly in developing countries where there is a shortfall between blood requirements and supply.

Only a small percentage of the population comes forward to donate blood on a regular basis. Hence there is a need to establish strategies to increase the recruitment and retention of voluntary non-remunerated blood donors to donate blood on a regular basis (3,4).

With a population of about 200 million, Nigeria is estimated to need 1.8 million units of blood per annum but only gets 500,000 units from voluntary unpaid donors leaving the shortfall of 73.3% to be filled by family replacement and commercialized donations. The National Blood Service Commission has reported that the frequent call for blood donation during emergencies is evidence of the shortage of donated blood in the blood banks (5). The haematological variables of voluntary donors has been reported to be more within the reference values when compared to that of remunerated donors (6). Furthermore, paid donors have a higher risk for infection with transfusion transmissible infections such as hepatitis B and C, syphilis and HIV 1 and 2. The incidence of these infections also play a key role in the availability and recruitment of potential blood donors. It is estimated that worldwide, 296 million people were living with chronic Hepatitis B infection in 2019 and age-specific HBsAg seroprevalence varies markedly by geographical region, with the highest prevalence (>5%) in sub-Saharan Africa. The estimate for Hepatitis C infection is 58 million globally with a moderate prevalence of 1.5-3.5% in Sub-Saharan Africa (7,8).

Awareness towards blood donation has been created severally yet there is a lack of regular practice and if this is not corrected in the nearest future there may be a large shortage of safe blood for transfusion. The role of health care and educational institutions and its students are pivotal in voluntary blood donation. The right information and attitude towards donation can be transferred in an educational setting. Hence this study's aim is to assess the prevalence of Hepatitis B and C virus as well as the level of knowledge and attitude towards voluntary blood donation among secondary school teachers in Calabar as this group could positively impact the younger generation with regards to voluntary blood donation.

Materials and methods

Study design: A cross-sectional study design was used for this study.

Study area: The study was carried out in Calabar metropolis, Cross River State, Nigeria.
Ethical approval and informed consent: Ethical approval was sought and obtained from the Research Ethics Committee of the Cross River State Ministry of Health, Calabar and informed consent was sought and obtained from the study participants.

Subject selection: A total of two hundred (200) apparently healthy male and female secondary school teachers and non-teaching staff within the age range of 18-60 years were recruited from five Government Secondary Schools in Calabar. Subjects outside the age range, those with known illness and those who did not give consent were excluded from participating in the study.

Administration of questionnaire: A structured questionnaire was pretested among twenty (20) staff of the University of Calabar before it was administered and completed by each subject. The questions were used to assess the knowledge and attitude of the study subjects towards voluntary blood donation.

Collection of samples: Three (3) ml of blood was collected aseptically with minimum stasis from a prominent vein and dispensed into plain sample containers which were then transported to the Haematology Laboratory of the University of Calabar Teaching Hospital. The samples were allowed to clot and then centrifuged to obtain serum which was used to screen for the presence of Hepatitis B surface antigen (HBsAg) and antigens to Hepatitis C virus.

Screening for Hepatitis B surface antigen using the strip method

Principle: The test is based on the chromatographic immunoassay for qualitative detection of the surface antigen of hepatitis B virus (HBsAg) in human whole blood, serum and plasma samples (Cortez diagnostics).

Procedure: A portion of the subject's serum is placed on the test strip impregnated with the hepatitis B surface antigen (HBsAg). The serum moves by capillary action. If the antibody to hepatitis B is present, antigen-antibody reaction takes place, and a line appears on the designated point of the strip. The result is read qualitatively and recorded as reactive or non-reactive.

Screening for Hepatitis C virus using the strip method.

Principle: The test is based on the chromatographic immunoassay for qualitative detection of the hepatitis C virus antigen in human whole blood, serum and plasma samples (Cortez diagnostics).

Procedure: A portion of the subject's serum is placed on the test strip impregnated with the hepatitis C antigen. The serum moves by capillary action. If the antibody to hepatitis C is present, antigen-antibody reaction takes place, and a line appears on the designated point of the strip. The result is read qualitatively and recorded as reactive or non-reactive.

Statistical analysis: Data obtained from this study were analyzed using Chi square on the statistical package for social sciences (SPSS) version 21. Results are presented in tables.

Results

This study assessed the prevalence of hepatitis B and C as well as the knowledge and attitude toward blood donation among secondary school teachers and staff in Calabar. The demographic data of the study population is presented in table 1. Of the two hundred subjects, 99 (49.5%) were males while 101 (50.5%) were females. Seventy-six (38.0%) of the subjects were aged between 28-37 years, 65 (32.5%) between 18 – 27 years, 52 (26.0%) between 38 – 47 years and 7 (3.5%) between 48-57 years. More than half of the subjects 135 (67.5%) had tertiary level of education while the remaining 65 (32.5%) had secondary school certificate (SSCE) as their highest educational qualification. Table 2 shows the prevalence of Hepatitis B and C among secondary school teachers and staff. Twenty (10%) of the subjects were reactive for hepatitis B while the prevalence of hepatitis C among the study subjects was 4% (n=8). The difference between the reactive and non-reactive subjects was observed to be statistically significant ($\chi 2 = 5.530$, $p = 0.019$). In table 3, the prevalence of hepatitis B and C observed in the present study is compared to previous reports. No significant difference ($p>0.05$) was observed between the prevalence for the present study versus previous reports.

Table 4 presents the knowledge of the study population about blood donation. Of the 200 subjects, 156 (78%) think that there is lack of awareness about blood donation while 44 (22%) do not agree. All 200 subjects (100%) considered blood donation to be important while 190 (95%) assert that voluntary blood donation is good whereas 10 (5%) think that it is not good to donate blood. Only 20 (10%) of the subjects had donated blood previously while 180 (90%) had never donated blood. Again, those who had received blood transfusion in the past were 16 (8%); 184 (92%) had not been transfused previously. A good number 174 (87%) of the subjects would be willing to donate blood if it was needed by a family member with 26 (13%) of them not ready to donate blood even for a family member. When asked if they could donate to a stranger in the case of an emergency, 130 (65%) agreed while 70 (35%) did not. Seventy percent (140) of the study subjects would advise friends to donate blood while 30% (60) would not. One hundred and sixty-nine subjects (84.5%) think that blood donation is beneficial while 31 (15.5%) do not. Twenty-six (13%) of the subjects think that

a person can collapse or die after donating blood while 174 (87%) disagreed.

In table 5, the attitude of secondary school teachers in Calabar towards voluntary and paid blood donation is expressed. All 200 (100%) of the respondents were not against blood transfusion. Furthermore, 132 (66%) think blood donation is a civic duty while 68 (34%) do not agree. In contrast, 164 (82%) think that money should be paid to blood donors while 38 (18%) think that donors should not be paid. Also, 171 (85.5%) of the study subjects think that gifts should be given in return for blood donated whereas 29 (14.5%) disagreed. One hundred and sixty- six (83%) of the subjects said they will donate blood if they are paid while 34 (17%) said they will not donate in exchange for payment.

Discussions

The secondary school teachers and staff that were recruited in this study consist of almost equal numbers of males and females indicating a gender balance in the workforce of the government secondary schools involved. The balance in the male-to-female ratio is advantageous as it cancels out any gender bias that may have been observed with regard to the knowledge and attitude of the study population toward blood donation. On the other hand, the study population is spread across different age groups which may affect the distribution of responses about blood donation. Over seventy percent of the subjects are aged between 18-37 years with a minority (7) belonging to the age group 48-57. It is observed that the teaching occupation at the secondary school level is mostly occupied by younger rather than older persons. The educational level of the study subjects show that 67.5 percent have tertiary education while the remaining 32.5% have secondary level of education. The latter group may comprise of other support staff like cleaners, teaching assistants and some administrative staff.

The prevalence of hepatitis B virus among the study population was found to be 10%. The implication is that this sub group are not eligible to be recruited as blood donors even if they were willing to donate. In the same vein, the prevalence of hepatitis C was observed to be 4% meaning that these affected subjects cannot donate blood. The observed prevalence of hepatitis B and C in the present study is comparable to previous reports in the general population (9,10).

The secondary school teachers and staff were observed to have a fair knowledge of blood donation. All the subjects believe that it is important to donate blood but more than half of them (78%) think that there is a general lack of awareness about blood donation. This suggests that the blood donor campaigns that are being done are not enough.

There is still a need to educate the populace about donating blood as this will go a long way to create awareness and get more people to become voluntary and regular blood donors (11). Blood transfusion centers in our locality could take advantage of the annual World Blood Donor Day which serves as a campaign to raise awareness about blood donation as well as to appreciate voluntary donors for their selfless service (1). Indeed, regular campaigns through physical and electronic contacts are key to recruiting new donors and getting existing ones to continue giving blood hence should be considered a very important task (12,13). The Federal Ministry of Health, Nigeria has called on healthy Nigerians to donate blood regularly in order to address a shortage of 1.5 million units based on blood transfusion needs in the country (14). Ninety-five percent of the subjects think that it is good to donate blood in a voluntary capacity and without remuneration but the remaining 5% did not agree. Despite this support for blood donation, only 10% of them had donated previously. This percentage is small compared to higher values obtained in similar studies (15,16). The higher rate may be due to the fact that these studies were conducted among health workers and potential blood donor who have better knowledge and attitude as well

as better understanding of the need for voluntary blood donation. Overall, the WHO standard is that if 1% of the population donates blood voluntarily and regularly, it will be enough to meet the basic blood needs of the entire population (1). Judging from the donation rate of 10% among the study population, there should be no shortage of blood for transfusion in our locality. Unfortunately, this statistic is not applicable to the entire population as blood remains a scarce commodity in Nigeria.

The need for blood transfusion is also a factor that influences blood drives and donations. It was observed in this study that only 8% of the subjects had received blood transfusions previously. This rate is adequately covered by the 10% who had donated blood in the past suggesting an ideal situation, but this is the exception rather than the rule in any random group of persons. The number of subjects willing to donate blood for family members made up 87%. This is as expected as the love for family is a great motivation for anyone to do what they normally would not have done. Notwithstanding, 13% of the subjects were not willing to donate blood even for a family member. This could be attributed to a negative mindset towards blood donation, fear, or a need for self-preservation. Nigerians have been said to have some false beliefs about blood donation including negative spiritual effects and infertility (17). It is interesting to note that more than half of the study subjects (65%) affirmed that they could donate blood to a stranger in an emergency situation. This is particularly commendable and speaks volumes about placing value on the lives of others. Similarly, seventy percent of the subjects would advise friends to donate as the occasion arises and the majority (84.5%) believe that there are benefits to being a blood donor. Sadly, up to 35% of the subjects were of the opinion that they cannot donate blood for a stranger no matter the emergency, 30% would not advise friends to donate blood and 15.5% think that blood donation offers no benefits. Again, it is worrisome that 13% of the secondary school teachers and staff sampled believe that one could collapse or even die after donating blood. The knowledge secondary school teachers have about blood donation may be a direct reflection of the knowledge that would be transferred to the students and this could greatly impact the availability of blood donors and safe blood for transfusion in the near future.

The attitude of secondary school teachers shows that none of them are against blood transfusion and more than half of them believe donating blood is a civic duty. It is therefore surprising that 82% are in support of paid donations and 85.5% of them recommend that gifts should be provided as a reward for blood donation. In fact, 83% affirmed that they would donate blood if they are paid. Reports show that the total blood donations in Nigeria is made up of 5% voluntary donors, 60% commercial donors and 30% family replacement which is a far cry from the WHO's aim to achieve 100% voluntary donations as a means of ensuring blood safety as well as adequate blood supply (6,18,19,1). This attitude could be attributed to economic hardship and a poor attitude towards anything that is done in a voluntary capacity.

Conclusions

This study has shown that the prevalence of Hepatitis B and C among secondary school teachers in Calabar is 10% and 4% respectively. Secondary school teachers and staff have fair knowledge of blood donation, and agree that it is important but are not willing to donate without remuneration. Lack of voluntary non-remunerated donation leads to a shortage of safe blood for transfusion and will promote commercial donation with associated risks. There is a need for regular awareness campaigns and blood drives among the populace.

Table 1: Demographic data of secondary school teachers in Calabar

Parameters	Frequency (n) n = 200	Percentage (%)
Gender		
Males	99.0	49.5
Females	101.0	50.5
Age		
18 – 27 years	65.0	32.5
28 – 37 years	76.0	38.0
38 – 47 years	52.0	26.0
48 – 57 years	7.0	3.5
Education		
Secondary	65.0	32.5
Tertiary	135.0	67.5

Table 2: Prevalence of Hepatitis B and C among Secondary School Teachers in Calabar

Type of Hepatitis	Reactive n (%)	Non-Reactive n (%)	X^2	p-value
Hepatitis B	20 (10.0%)	180 (90.0%)	5.530	0.019*
Hepatitis C	8 (4.0%)	192 (18.0%)		

*Significant difference at p less than 0.05

Table 3: Prevalence of Hepatitis B and Hepatitis C: the present study versus previous reports

Type of Hepatitis	Present study	Previous Studies	χ^2	p-value
Hepatitis B	10.0%	13.6%[a]	0.667	0.414
Hepatitis C	4.0%	10.0%[b]	2.571	0.109

a: prevalence of Hepatitis B virus (Musa *et al*. (2015).

b: prevalence of Hepatitis C virus (Okonkwo *et al*. (2017)

Table 4: Knowledge of Secondary School Teachers about blood donation

Questions	Yes n (%)	No n (%)
Do you think there is a lack of awareness towards blood donation?	156 (78.0)	44 (22.0)
Do you consider blood donation to be important?	200 (100.0)	0 (0.0)
Do you think voluntary blood donation is good?	190 (95.0)	10 (5.0)
Have you ever donated blood?	20 (10.0)	180 (90.0)
Have you ever received blood transfusion?	16 (8.0)	184 (92.0)
Would you donate if a family member needed blood?	174 (87.0)	26 (13.0)
Would you donate to a stranger in the case of an emergency?	130 (65.0)	70 (35.0)
Would you advise your friend to donate blood voluntarily?	140 (70.0)	60 (30.0)
Do you think there are any benefits to blood donation?	169 (84.5)	31 (15.5)
Do you think a person can collapse or die after donating blood?	26 (13.0)	174 (87.0)

Table 5: Attitude of secondary school teachers towards voluntary versus paid blood donation

Questions	Yes n (%)	No n (%)
Are you against blood transfusion?	0 (0.0)	200 (100.0)
Do you consider blood donation to be a civic duty?	132 (66.0)	68 (34.0)
Do you think that money should be paid to donors?	164 (82.0)	38 (18.0)
Do you agree that a token gift should be given to donors?	171 (85.5)	29 (14.5)
Would you donate blood if you were paid?	166 (83.0)	34 (17.0)

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References

1. World Health Organization. World Blood Donor Day retrieved 10th Aug, 2023 from www.who.int 2023.
2. Di Lorenzo N V, Tognoni L T. Gaspari, A L. Surgery Needs Better Support from EU. Surgical Endoscopy 2011; 25, 339- 342.
3. Misje A H, Bosnes V, Heier H E. (2009). Gender differences in presentation rates, deferrals and return behavior among Norwegian blood donors. Vox sanguinis, 98: e241- e248.
4. World Health Organization. Towards 100% Voluntary Blood Donation: A Global Framework for Action WHO Geneva retrieved 10th August 2023 from www.ncbi.nlm.nih.gov 2010.
5. World Health Organization National Blood Service Commission. Blood donation-a selfless life-saving act www.afro.who.int 2023.
6. Nwogoh B, Awodu O A, Bazuaye G N. Blood donation in Nigeria: standard of the donated blood Journal of Lab Physicians 2012; 4(2), 94-97.
7. World Health Organization. Hepatitis B Retrieved 10th August 2023 from www.who.int 2023.
8. World Health Organization. Hepatitis C Retrieved 10th August 2023 from www.who.int 2023.
9. Musa B M, Bussell S, Borodo M M, Samaila A A, Femi O L. Prevalence of hepatitis B virus infection in Nigeria, 2000-2013: A systematic review and meta-analysis. Nigerian Journal of Clinical Practice 2015; 18(2), 163-172.
10. Okonkwo U C, Okpara H, Otu A, Ameh S, Ogarekpe Y, Osim H, Inyama H. Prevalence of hepatitis B, hepatitis C and human immunodefiiency viruses, and evaluation of risk factors for transmission: Report of a population screening in Nigeria South African Medical Journal 2017;107(4):346-351.
11. Majdabadi H A, Kahouei M, Taslimi S, Langari M. Awareness of and attitude towards blood donation in students at the Semnan University of Medical Sciences Electron Physician 2018; 10(5), 6821-6828.
12. Siromani U, Isaac T R, Daniel D, Selva raj K G, Mammen J J, Nair S C. Recruitment & Retention of Voluntary Blood Donors Through Electronic Communication Acta Informatica Medica 2013; 21(2),142.
13. National Health Service. Blood Donation and Recruitment. Retrieved 13th August 2023 from www.nhsbt.nhs.uk 2023.
14. Zarokada H. Health experts encourage blood donation to bridge 1.5m unit deficit. Interview with Folorunsho Adebiyi Permanent Secretary, Federal Ministry of Health, Nigeria. Business Day 23rd June, 2023.
15. Nwogoh B, Aigberadion U, Nwannadi A I.

Knowledge, attitude and practice of voluntary blood donation among Healthcare workers at the University of Benin Teaching Hospital, Benin City, Nigeria Journal of Blood Transfusion 2013; 797830.

16. Ugwu N I, Oti W J, Ugwu C N, Uneke C J. Voluntary non-remunerated blood donation: Awareness, perception and attitude among potential donors in Abakiliki, Nigeria. Nigerian Journal of Clinical Practice 2019; 22(11), 1509-1515.
17. Adedipe A. Nigerians falsely believe blood donation reduces fertility, has spiritual effect. Interview with Professor Musa Muhibi Punch Newspaper 28th May, 2023.
18. Obinna C. Nigeria far from achieving 100% voluntary blood donation. Interview with the National Blood Transfusion Service Vanguard Newspaper 14th June, 2023.
19. Mussema A, Bawore S G, Abebaw T, Tadese W, Belayineh M, Virga A et al. Voluntary blood donation, knowledge, attitude and practice among adult populations of Hosanna Town, South Ethiopia: a community-based cross-sectional study. Frontiers of Public Health 11:1141544.

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