

Voluntary Non-Remunerated Blood Donation: Awareness, Perception, and Attitude among Potential Blood Donors in Abakaliki, Nigeria

NI Ugwu, WJO Oti¹, CN Ugwu², CJ Uneke³

Department of Haematology and Immunology, Faculty of Clinical Medicine, College of Health Sciences, Ebonyi State University, Abakaliki, ¹Department of Industrial Chemistry, Faculty of Sciences, Ebonyi State University, Abakaliki, ²Department of Internal Medicine, Federal Teaching Hospital, Abakaliki, ³Director, Directorate of Research, Innovation and Commercialization (DRIC), Ebonyi State University, Abakaliki, Nigeria

Received:
21-Mar-2019;
Revision:
25-May-2019;
Accepted:
25-Jun-2019;
Published:
13-Nov-2019

INTRODUCTION

Blood transfusion is an important aspect of medical care. In spite of the relevance of blood donation, the major challenge to the transfusion of blood is meeting the increasing demand for blood and ensuring its constant supply. The unavailability of blood has led to deaths and worsening morbidities. The importance of blood transfusion in medical practice cannot be overemphasized as millions of lives have been saved since the discovery of ABO blood groups.^[1] Despite advances in medical research, an ideal substitute for blood is yet to be found, hence blood donation is still the only source of blood.^[1]

ABSTRACT

Background: Blood is the most donated tissue in medical practice and a veritable tool in many life-saving situations if used appropriately and judiciously. Despite the increased demand for blood, the supply of safe blood has been inadequate. **Objective:** The aim of this study is to determine the perception and attitude toward voluntary non-remunerated blood donation among medical students in Abakaliki. **Subjects and Methods:** This was a cross-sectional study carried out at Federal Teaching Hospital, Abakaliki, between October 2017 and March 2018. Stratified and simple random sampling technique was used to recruit participants from among medical students using pretested, semi-structured, self-administered questionnaire. Data were analyzed using SPSS software version 20. **Results:** A total of 158 medical students who participated in the study were made up of 90 (57%) males and 68 (43%) females. The most prevalent age group was 20–25 years. Most of the participants, 151 (95.6%), were single. The proportion of the participants who had good knowledge about voluntary blood donation was 72.8%, while the attitudes of the respondents were positive to most aspects of blood donation considered. However, participants were found to have poor practice of voluntary blood donation as only 56 of 158 (35.4%) had ever donated blood. **Conclusion:** The majority of the participants have good knowledge and positive attitude toward voluntary non-remunerated blood donation. However, their practice of voluntary blood donation was poor. Sustained awareness creation and enlightenment is relevant to influence the masses to have better knowledge and positive attitudes toward voluntary non-remunerated blood donation with improved blood donation practices.

KEYWORDS: Blood donation, medical students, Nigeria, perception

Globally, of the estimated 80 million units of blood donated annually, only 38% are collected in the developing world where 82% of the population live and the need is enormous.^[2] The World Health Organization (WHO) advocates that if 1% of a country's population donates blood, it would be sufficient to meet the country's basic requirement for blood.^[3] However,

Address for correspondence: Dr. NI Ugwu,

Department of Haematology and Immunology, Faculty of Clinical Medicine, College of Health Sciences, Ebonyi State University, Abakaliki, Nigeria.

E-mail: ngoziugwu5@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Ugwu NI, Oti WJ, Ugwu CN, Uneke CJ. Voluntary non-remunerated blood donation: Awareness, perception, and attitude among potential blood donors in Abakaliki, Nigeria. Niger J Clin Pract 2019;22:1509-15.

Access this article online

Quick Response Code:



Website: www.njcponline.com

DOI: 10.4103/njcp.njcp_159_19

83% of the global population who live in developing countries have access to only 40% of the blood needed, and this blood in 60% of cases is collected from paid and family replacement blood donors rather than from voluntary, non-remunerated, low-risk donors.^[4]

All blood components and manufactured blood products originate from blood donors, so the safety of blood transfusion begins with careful selection of donors. Accordingly, donors should be managed in a way that ensures high standard of care. An adequate and reliable supply of safe blood can be assured by a stable base of regular, voluntary, non-remunerated blood donors, who have been reported to be the safest group of donors as the prevalence of blood borne infections is lowest among these donors.^[5]

Inadequate blood donation in Sub-Saharan Africa is a major public health problem. Shortage of blood has serious consequences given that blood transfusion is an essential component of modern healthcare. In Africa, many preventable deaths occur because there are insufficient blood donations to meet patients' needs. For instance, Bates *et al.* reported that 26% of inpatient deaths from maternal hemorrhage in Africa are associated with nonavailability of blood.^[6]

The need for blood and blood products is rising in all parts of the world. At Nigeri's current level of healthcare delivery, it is estimated that about 1.5 million units of blood would be required annually.^[7] However, a National Blood Transfusion Baseline Survey in 2005 showed that only about half a million units of blood were collected in the previous 1 year with paid donors accounting for more than 90% of blood donated.^[7] The survey further revealed that in the public sector, 25% and 75%, respectively, were commercial (paid) and replacement donors, while voluntary non-remunerated donors were negligible. In the private sector, the reverse was obtained with 75% and 25%, respectively, being commercial and replacement donors, while voluntary non-remunerated donors were insignificant. These findings are similar to studies carried out in various parts of the country.^[8,9] This is worsened by the statistics that people already infected with HIV through unsafe blood transfusion in Nigeria account for the second largest source of HIV infection among infected individuals.^[7]

There is inadequate supply of safe blood and blood product to meet up with the demands for blood. The majority of blood available in our environment is from family replacement and paid donors. Studies have shown that the safest donors are found among people who donate their blood voluntarily purely out of altruism.^[10-12] A person who needs money is more likely to conceal his or her true state of health.

Young people may be the hope and future of safe blood supply in the world. As the majority of them will be pursuing their education, universities and colleges can become a good platform for motivational activities. It is therefore important to understand the prevailing attitude toward blood donation among youths. Students constitute an important part of the literate society worldwide. Medical students as future doctors are in a strategic position to enlighten and serve as role models to the general population with regard to voluntary blood donation. Assessing their knowledge and attitude toward blood donation may help identify gaps which will be addressed. Clinical students, by virtue of being in the hospital environment, are expected to have good knowledge and positive attitude toward voluntary blood donation and to serve as a source of voluntary blood donors. Having good knowledge about blood donation will also help equip them with facts and information to educate the masses and mobilize voluntary blood donors. Thus, the objective of this study was to determine the awareness, perception, and attitude of medical students toward voluntary non-remunerated blood donation.

MATERIALS AND METHODS

Study design and location

This was a cross-sectional study carried out at the Federal Teaching Hospital, Abakaliki, Ebonyi State, South Eastern Nigeria, from October 2017 to March 2018.

Study population and sample size

The sample size for this study was determined using Taro Yamane's formula ($n = N/1 + N(e)^2$) for finite population and was based on a 95% confidence level, and a finite population of 304 which is the total population of medical students in 400, 500 and 600 levels and a desirable degree of accuracy set at 0.05. A minimum sample size of 169 was calculated. However, the sample size was increased by 10%, and 185 questionnaires were given out to take care of nonresponse. Of this, 158 were correctly and completely filled giving a response rate of 93.5%. These questionnaires were considered valid and were used for data analysis.

Sampling technique

The participants were selected using stratified sampling technique. The participants' level of study formed the basis of each stratum. Sampling frame for the study was 304 (comprising 109, 102, and 93 students in 400, 500, and 600 levels, respectively). Proportional allocation was used to select the number of students required to partake in the study from each level. At each level, simple random sampling by ballot method was used to select those who participated in the study.

Study instrument/data collection

The tool for data collection was a pretested, semi-structured, self-administered questionnaire. The questionnaire consisted of four sections. Section A comprised the sociodemographic characteristics of the participants, section B consisted of questions that assessed participants knowledge of VNRBD, section C consisted of questions that assessed participants' attitude toward voluntary blood donation, and section D comprised questions that sought to assess the practice of voluntary blood donation among the participants.

The questionnaires were filled and returned by the participants and questionnaires with incomplete information were excluded.

Scoring of outcome variables

Knowledge

A total of 10 questions were used to assess knowledge. A score of 1 was awarded for every correct answer and 0 for every wrong answer or unanswered question giving a range of 0–10. Scores were converted to percentages, and getting all the 10 questions correctly were scored as 100% while getting none of the questions correctly was scored as 0%. The scores were graded as poor knowledge (scores 49.9% and below), fair knowledge (scores between 50% and 69.9%), and good knowledge (scores 70% and above).

Attitude

Ten questions were also used to assess the participants' attitude toward VNRBD using a 5-point Likert scale. The Likert items were strongly disagree, disagree, indifferent, agree, and strongly agree which were graded as 1, 2, 3, 4, and 5, respectively, giving a total minimum score of 10 and a maximum score of 50. The total attitude scores were obtained and converted to percentages and graded as negative attitude (scores 49.9% and below) and positive attitude (scores 50% and above).

Practice

Five questions on the study instrument were used to assess participant's practice of voluntary blood donation and these practices were represented in proportions.

Data analysis

Data collected were cleaned for inconsistencies in the responses, coded, and were entered into the computer using IBM Statistical Package for Social Sciences (SPSS) version 20 software and analyzed. Descriptive statistics was used to compute percentages and averages. The results were presented in tables and charts, and expressed as percentages/proportions, means, and standard deviation.

Ethical approval

The study was approved by the Research and Ethics Committee of Ebonyi State University, Abakaliki. Informed written consent was obtained from each participant before being included in the study.

RESULTS

Sociodemographic characteristics

A total of 158 medical students participated in this study and were made up of 98 (62%) males and 60 (38%) females with male-to-female ratio of 1.6:1. A higher proportion of the participants [128 (81%)] were within the age group of 20–25 years. All the participants were Christians with most [151 (95.6%)] of them single [Table 1].

Knowledge about voluntary non-remunerated blood donation

Ninety-five (60.1%) of the participants knew that donated blood is about 500 mL, 137 (86.7%) knew that the accepted age for blood donation is 18–60 years, while 96 (60.8%) knew that the accepted weight for blood donation is 50 kg and above [Table 2].

Attitude of medical students toward voluntary blood donation

Most of the participants have positive attitude toward voluntary blood donation. A total of 113 (71.5%) participants agreed that blood donation has some health benefits, 115 (72.8%) agreed that voluntary

Table 1: Sociodemographic characteristics of medical students who participated in the study

Characteristics	Frequency	Percentage
Sex		
Males	98	62
Females	60	38
Total	158	100
Age (years)		
<20	2	1.3
20-25	128	81
26-30	23	14.6
>30	5	3.2
Total	158	100
Marital status		
Married	7	4.4
Single	151	95.6
Total	158	100
Religion		
Christianity	158	100
Islam	0	0
Traditional	0	0
Others	0	0
Total	158	100

Table 2: Medical students' knowledge about voluntary blood donation

Facts about blood donation	Correct responses (%)	Incorrect responses (%)
Donated blood volume is about 500 mL	95 (60.1)	63 (39.9)
A healthy adult male or female can donate 3 or 4 times in a year	135 (85.4)	23 (14.6)
Suitable age for blood donation is 18-60 years	137 (86.7)	21 (13.3)
Minimum weight for blood donation is 50 kg	96 (60.7)	62 (39.3)
Blood is screened for infections before transfusion	156 (98.7)	2 (1.3)
Donated blood can be separated into different blood components	115 (72.8)	43 (27.2)
Blood can be stored after donation	151 (95.6)	7 (4.4)
Blood transfusion can cause adverse reaction in the recipient	153 (96.8)	5 (3.2)
Donated blood can be used for more than one person	125 (79.1)	33 (20.9)
Blood donation process lasts for about 20 min	65 (41.1)	93 (58.9)

Table 3: Medical students' positive attitude toward voluntary non-remunerated blood donation

Attitudinal statements	Frequency of positive attitude (%)
Blood donation have some health benefits	113 (71.5)
Voluntary non-remunerated blood donation is better than remunerated blood donation	115 (72.8)
Blood donation causes ill health	104 (65.8)
I am willing to donate blood	128 (81.0)
I will encourage my friends and relations to donate	125 (79.1)
Blood should only be donated for family members and friends	144 (91.1)
Only males should donate blood	143 (90.5)
Any healthy adult can donate blood	131 (82.9)
Blood transfusion saves lives	143 (90.5)

non-remunerated blood donation is better than remunerated blood donation, 128 (81%) were willing to donate blood, while 125 (79.1%) encouraged their relations and friends to donate blood [Table 3].

Practice of voluntary non-remunerated blood donation among medical students

Despite good knowledge and positive attitude toward voluntary blood donation among the participants, there was poor practice of voluntary non-remunerated blood donation as majority [102/158 (64.4%)] have

never donated blood in the past. Among those 56 of 158 (35.4%) who have ever donated blood, most of them are not regular blood donors as majority of them, (69.6% and 16%) have donated only once and twice, respectively. The donations [41/56 (73.2%)] were made mainly for either a family member or a friend. Fifty-six (35.4%) participants who have ever donated blood were mostly males. Most (87.5%) of the participants who donated blood did that without pay.

Some of the reasons given for not donating blood included lack of information on blood donation and its importance (29.7%), do not have enough blood to donate (22.8%), fear of the blood donation process (25.3%), cultural/religious reasons (7.6%), and misuse of blood in the hospital (7.6%). Among the participants who have ever donated blood, reasons given for donating blood are mainly to save life (93%). Other reasons include as a reward for benefiting from donated blood in the past (3.8%), to get free medical check (1.9%), and to get money (1.3%).

DISCUSSION

Blood transfusion is a very crucial component of patient management. It has been life-saving procedure especially in cases of medical emergency and for patients suffering from various medical and surgical conditions. Voluntary blood donors are the major source of safe blood. Being a medical student makes it very crucial to have adequate information/knowledge with the right attitude and practices related to blood donation as all these impact patient's life in a very critical manner. With the level of ignorance in our society, there is need to create awareness among general population about blood donation to maintain a regular blood supply. Young medical students can serve as example to take a lead in this noble course.

This study revealed that the most prevalent age group among the participants was 20–25 years. The most prevalent age group found in this study is lower than that found in a similar study conducted in Benin City, Nigeria, where the most prevalent age group is 25–29 years.^[13] The reason may be because the age of entry into tertiary educational institutions is lower these days compared with what it used to be some years back. In a developing country such as Nigeria, lack of knowledge, blood donor recruitment, and retention strategy and various misconceptions have resulted in limited number of voluntary donors. This challenge can be tackled by adopting such recruitment methods that can overcome the misconceptions and also motivate the public to donate at an early age, so that they become lifelong voluntary donors. According to WHO, blood

donation can be started safely from 17 years of age, so it is important that the young generation be motivated to engage in this harmless task.^[14] To motivate students, there is need to create awareness about voluntary non-remunerated blood donation. Such studies are important to understand various factors that affect recruitment and retention of blood donors, to know the potential reasons that restrict them from doing this simple but lifesaving task, and to know the reasons that motivate the donors to donate blood. This can further help in planning proper and creative ways to recruit regular voluntary donors. In the recent past, studies have shown that the rate of blood donation among medical students is more when compared with nonmedical students and girls donate less when compared with boys.^[15]

This study also involved more males than females. This is similar to the findings in a study conducted in Benin City, Nigeria, where more males were recorded.^[13] The reason may be because some of our culture encourages early girl child marriage and so females usually get married at a younger age compared with males so will not have the opportunity of going to higher institution. All the participants were Christians and this may be because Christianity is the religion dominated by the South Eastern part of Nigeria.

Most of the participants were single. This is similar to the findings of previous studies.^[16] This may be because people usually prefer to finish their education before getting into marriage to avoid distraction. Education will help equip them to be able to face the challenges of life, so completing it without any interference is the right decision.

This study also found that the knowledge about voluntary blood donation among the participants was good. This is similar to the findings of the study conducted by Ogboghodo *et al.* who also reported good knowledge about voluntary blood donation among medical students.^[13] In contrary, Ahmad *et al.* reported poor knowledge among the medical students they studied.^[17] The poor knowledge reported in their study may be because their study population was made up of medical students who were in preclinical class (first- and second-year medical students) when the students had not been exposed to a course in blood transfusion medicine. Similarly, a study conducted by Urgesa *et al.*, among community members to determine their knowledge and attitude about blood donation, found that only 43.5% of the participants had knowledge above average.^[18] Good knowledge found in this study compared with their own study was not surprising considering the fact that there were differences in the study population. The participants

in this study have earlier received lectures in hematology and blood transfusion medicine, and therefore exposure to such lectures may have improved their knowledge generally. The finding that most of undergraduate students in this study had good knowledge of blood donation is commendable as this may be the means to correct the several misconceptions that are associated with blood donation. This is important bearing in mind that the WHO has affirmed that young people which includes undergraduate medical students are the main donor pool especially in developing countries.^[14]

All the participants had a positive attitude toward voluntary blood donation. This corroborates with findings from other studies.^[13,16] This is not surprising considering the fact that the participants in the course of their training have been taught the lifesaving benefits of blood donation. It is therefore expected that good knowledge will likely bring about positive attitude and eliminate misconceptions and fears associated with blood donation. Medical students will be future medical professionals who will eventually be the ones to request and utilize blood for the management of conditions that may require blood transfusion. Hence, having positive attitude toward blood donation will translate to improved availability of voluntary blood donors among medical students. This will make for easy accessibility to safe blood and blood products for medical interventions, improvement in the quality of care, and reduction in loss of lives due to blood scarcity. Finding of positive attitude among the participants in this study is, however, contrary to the previous studies where the researcher reported poor attitude in a majority of the study participants.^[19-21] The difference in the attitude toward blood donation could be due to variation in study population since those studies were carried out among community members while this study was carried out among medical students who by virtue of their training would have been better informed and so likely to have favorable attitude to blood donation.

Another finding of this study is that despite the good knowledge and positive attitude toward voluntary blood donation among the participants, there was poor practice of voluntary blood donation as majority have never donated blood in the past. This is similar to the findings of research conducted in Faisalabad, Pakistan, among female medical students which reported that despite having adequate knowledge about blood donation, more than 80% had never donated blood and the number of regular voluntary donors was alarmingly less.^[22] Shenga *et al.* and Ossai *et al.* also reported similar finding of disparity between good knowledge, positive attitude, and poor practice of blood donation.^[23,24] These observed

statistics were lower than that from the results of other studies.^[25] The differences could be a reflection of perception of the practice of blood donation in the various societies. 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. Young persons are the most potential blood donors in every society, and students constitute a huge proportion of them. These potential donors should therefore be well-harnessed by sensitization and continued health education using appropriate behavior change communication models to translate positive attitudes to actual practice.

WHO recommends that 100% of the blood requirements should be from voluntary non-remunerated blood donors.^[14] Unfortunately, studies have shown that a majority of our donor are professional donors and family replacement donors, while voluntary non-remunerated blood donors are very few as suggested by this study. To reverse this trend, education and enlightenment about blood transfusion is important with the aim of improving and sustaining the quality of transfusion medicine practice in our society.

Medical students have good knowledge and positive attitude toward voluntary blood donation. However, good knowledge and positive attitude did not reflect good practice of voluntary blood donation among the participants. There should be regularly scheduled awareness creation and voluntary blood donation campaigns organized at the community level to utilize potential donors who lack the opportunity and time to donate blood and also to transform the positive attitude to actual practice. Information on the benefits of voluntary non-remunerated blood donation should be emphasized regularly to correct the impression that blood donation is a harmful practice. Incentives such as issuance of certificates, badges, T-shirts, and free medical check-ups are exploratory options for motivation and improved practice.

The limitation of this study includes the fact that it was carried out among medical students who are in the clinical stage of their training, and therefore generalizing the findings of this study should be done with caution.

Acknowledgement

The authors acknowledge the kind support of the Management of Ebonyi State University for creating an enabling environment to carry out this study and the staff of the Department of Haematology for their assistance in administering the questionnaires

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Sharma R, Madan N, Venkatesh S, Ichhpupani RI, Lai S. Factor influencing blood donation and the rational use of blood. *J of Commun Dis* 2010;42:185-90.
- World Health Organization. Global blood safety and availability. Key facts and Figures 2010 [updated 2010; cited 2011 Feb]. Available from: http://www.who.int/worldblooddonorday/media/Global_Blood_Safety_and_Availability_Key_facts_figures_2010.pdf. [Last accessed on 2018 Feb 10].
- World Health Organization. Strategies for blood donor recruitment 2014. Available from: http://www.who.int/searo/2001/SEA_HLM_33. [Last accessed on 2018 Mar 24].
- Enosolease ME, Imarengiaye CO, Awodu OA. Donor blood procurement and utilization at the University of Benin Teaching Hospital, Benin City. *Afr J Reprod Health* 2004;8:59-63.
- Bates I, Chapotera GK, McKew S, van den Broek N. Maternal mortality in sub-Saharan Africa: The contribution of ineffective blood transfusion services. *BJOG* 2008;115:1331-9.
- Federal Ministry of Health. Nigerian National Blood Policy. Abuja: National Blood Transfusion Service, FMOH; 2006.
- Ugwu AO, Madu AJ, Efobi CC, Ibegbunam OG. Pattern of Blood donation and characteristics of blood donors in Enugu, Southeast Nigeria. *Niger J Clin Pract* 2018;21:1438-43.
- Ahmed SG, Ibrahim UA, Hassan AW. Adequacy and pattern of blood donations in North Eastern Nigeria. *Ann Trop Med Parasitol* 2007;101:725-31.
- Ejele OA, Erhabor O, Nwuche CA. The risk of transfusion-transmissible viral infections in the Niger Delta area of Nigeria. *Sahel Med J* 2005;8:16-9.
- Nwogoh B, Ikponwen D, Isoa ME. Donor blood procurement and the risk of Transfusion transmissible viral infections in a tertiary health facility in South-south Nigeria. *Niger Med J* 2011;52:227-9.
- Buyx AM. Blood donation, payment and non-cash incentives: Classical Questions drawing renewed interest. *Transfus Med Hemoth* 2009;36:329-39.
- Ogboghodo EO, Ofili AN, Ogunbor OJ, Ogenyi CC, Okpala C. Knowledge, attitude and practice of voluntary non-remunerated blood donation among medical students in a tertiary institution in Southern Nigeria. *J Med Biomed Res* 2015;14:105-17.
- World Health Organization. WHO blood safety and availability fact sheet, 2012. Available from: <http://www.who.int/mediacentre/factsheets/fs279/>. [Last accessed on 2018 Mar 17].
- Mamatya A, Prajapati R, Yadav R. Knowledge and practice of blood donation: A comparison between medical and non-medical Nepalese students. *Nepal Med Coll J* 2012;14:283-6.
- Salaudeen AG, Odeh E. Knowledge and behavior towards voluntary blood donation among students of a tertiary institution in Nigeria. *Niger J Clin Pract* 2011;14:303-7.
- Ahmad N, Abraham J, Sony S, Hahla N, Pranav R, Mohammed R, *et al.* Assessment of knowledge, attitude and practice (KAP) of blood donation among MBBS students of a medical college in Kollam, Kerala. *J Evol Med Dent Sci* 2015;4:6086-95.
- Urgesa K, Hassan N, Seyoum A. Knowledge, attitude and practice regarding Voluntary blood donation among adult residents of Harar town, Eastern Ethiopia: A community-based study. *J Blood Med* 2017;8:13-20.

18. Jemberu YA, Esmael A, Ahmed KY. Knowledge, attitude and practice towards blood donation and associated factors among adults in Debre Marks town, Northwest Ethiopia. *BMC Hematol* 2016;16:23-30.
19. Olubiyi SK, Babalola FR, Olubiyi MV, Umar NJ, Ibraheem MA. Knowledge, attitude and practices of blood donation among adults in Ado-Ekiti, Nigeria. *Sky J Med Med Sci* 2014;2:052-7.
20. Okpara RA. Attitudes of Nigerians towards blood donation and blood transfusion. *Trop Geogr Med* 1989;41:89-93.
21. Tariq S, Tariq S, Shireen J, Tariq S. Knowledge and attitude of blood donation among Female medical students in Faisalabad. *J Pak Med Assoc* 2018;68:65-70.
22. Shenga N, Pal R, Sengupta S. Behavior disparities towards blood donation in Sikkim, India. *Asian J Transfus Sci* 2018;2:56-60.
23. Ossai EN, Eze NC, Chukwu O, Uguru UA, Ukpai EC, Ihere E. Determinants of practice of blood donation among undergraduate students of Ebonyi State University Abakaliki, Southeast Nigeria. *Ach Community Med Public Health* 2018;4:001-7.
24. Ciepiela O, Jaworska A, Lacheta D, Faalkowska N, Popko K, *et al.* Awareness of blood group and blood donation among medical students. *Transfus Apher Sci* 2017;56:858-64.
25. Ciepiela O, Jaworska A, Lacheta D, Faalkowska N, Popko K, Demkow U. Awareness of blood group and blood donation among medical students. *Transfus Apher Sci* 2017;56:858-64.