Check for updates

The Journal of Medical Research 2024; 10(1):31-36

The Journal of Medical Research

Factor Analysis of Motivational and Deterrent Factors among Voluntary Non-Remunerated Blood Donors in Ibadan, Nigeria

Oladapo Wale Aworanti[1,2], Sunday Peter Ogundeji[1], Adedayo Qasim Oladele[2], Titilola Stella Akingbola[1], Taiwo Rachel Kotila[1]

[1] Department of Haematology, University College Hospital/University of Ibadan, Ibadan, Nigeria

[2] National Blood Service Commission, South West zonal centre, Ibadan, Nigeria

Research Article

JMR 2024; 10(1):31-36
January- February
ISSN:2395-7565

www.medicinearticle.com
Received:09-12-2023
Accepted:13-02-2024
DOI: 10.31254/jmr.2024.10107

***Corresponding author:**
Dr. Oladapo Aworanti
Consultant Haematologist, University College Hospital, Ibadan and Acting Zonal Director, National Blood Service Commission, South west zonal centre, Ibadan, Nigeria
Email:
aworantioladapo@yahoo.com

Abstract

Background and Objectives: The aim of this study was to establish which motivational, deterrent and socio-demographic factors that would engender long-term commitment to voluntary, non-remunerated blood donation. Study Design and Methods: A cross-sectional sample survey of blood donors who participated in the 2021 world blood donor day in Ibadan, Nigeria, was conducted. Donors filled in a self-administered questionnaire during donation. Data on motivation and deterrent were analyzed using factor analysis. Results: The majority of the blood donors were aged 21-40 years and they had donated 0-53 times in the past. Three-quarters had donated at least 10 times previously. Two dimensions of blood-donor motivation were identified with factor analysis. These were: self-esteem and social reasons (such as the influence of friends and family). The most important deterrent factors for blood donation were 'hate sight of blood" and time taken to donate. Conclusion: The motivation factors for being a VNRD are related to self-esteem and social factors. We recommend that these factors should be the backbone of campaigns and awareness programme in effort to increase and retain VNRD pool our environment.

Keywords: Factor analysis, Blood donation, Motivation for donating blood, Deterrents to blood donation.

INTRODUCTION

Blood transfusion is an important component of health care system in every part of the world [1,2]. It saves millions of lives each year in both routine and emergency situations such as road traffic accident, post-partum haemorrhage, and other health challenges. It also allows increasingly complex medical and surgical interventions to be done and subsequently indirectly increases the life expectancy and quality of life of patients with a variety of medical and surgical conditions [1-4].

Blood donation is the act of giving the whole or components of the blood for the purpose of saving the lives of an injured or sick individuals [5]. Blood donation could be by manual or apharesis method depending on the medical advancement of a particular blood bank or hospital. There are however three types of donors [6-8], they are voluntary non remunerated blood donors that donate for altruistic reasons only. Family replacement donors purposely donate for their friends and family members in the hospital. The last set of donors are the paid donors, they are paid to donate and they are the commonest donors in our environment, they constitute about 95% of blood donors in Nigeria [7,8]. It has been reported that people involved in paid donation are involved in other forms of vices which could affect the blood safety [9-13].

Patients who require transfusion as part of their clinical management believe that sufficient safe blood is available to meet their needs. However, many patients still die or suffer unnecessarily because they do not have access to these units of blood. The timely availability of safe blood and blood products depends on the number of voluntary blood donors in the country [7].

Melbourne Declaration recognized voluntary non-remunerated blood donors (VNRBD) as the foundation for a safe transfusion service [14]. There is increasing blood transfusion demand globally but reducing voluntary donation rate [15-17]. There is no national data as regards the number of units of blood and blood products needed in Nigeria as well as number units donated annually. However, World Health Health Organization put the blood demand for any country at 1% of the total population which translates to 2.2 million units of blood for Nigeria [7]. Nigeria is currently struggling to make available half of the needed blood units despite the increased number of paid donors.

There is need to increase the number of blood donation in Nigeria via voluntary, non- remunerated blood donation and also retain the ones that have been donating in the past. The objective of this study was to determine the motivations and deterrent to voluntary blood donation in a group of people that presented for the year 2021 world blood donor day at the National Blood Service Commission and University College Hospital, Ibadan with a view to develop strategies to expand the VNRD pool based on the findings of this study.

MATERIALS AND METHODS

Study design and setting

Donation behaviour and motives for donation were analyzed using a cross-sectional sample of donor at the World blood donor day 2021 present at both the National Blood Transfusion Service South west zonal Centre, Ibadan and the University College Hospital (UCH), Ibadan. This survey was carried out with the aim of identifying the motives and deterrents for voluntary blood donation among donors so that effective strategic intervention which would increase the number of VNRD pool can be implemented in Ibadan.

Ibadan is a cosmopolitan city with a projected population of 3 million. The blood bank services of UCH and NBTS collects a yearly total of about 10 000 and 2 500 blood units making them the highest sources of blood in the state. Blood transfusion services in Nigeria began in UCH and it was in UCH that the first ELISA screening of donor was carried out in Ibadan in 1984.

Target population and sample size.

All donors who showed up at the NBTS and UCH on June 14, 2021 (World blood donor day) were approached and those who consented were recruited into the study. A total of 230 donors participated in the 2021 world blood donor exercise after a campaign rally.

Ethical consideration

Approval was obtained from the headquarters of National Blood Service Commission as part of Ibadan survey on voluntary blood donor. Informed consent was obtained from all the participants. The study was conducted in accordance with the ethical principles of the Helsinki declaration. The study participants were informed about the purpose of the study and they were assured of the confidentiality of the data obtained which were stored in a password-protected computer that was only accessible to the researchers.

Data collection

Self-administered questionnaires were used to obtain data. The questionnaire comprised of three sections, first on sociodemographic (age, gender, occupation, level of education, marital status etc.), donation history and 17 statements on motives for donation as well as 7 statements on deterrents to donation. These statements were based on the voluntary functions inventory (VFI) which contains a list of questions related to Motivational factors and potential deterrents to blood donation validated by *Vincent et al* and *Misje et al (18,19).* The VFI is designed for identification of motives for volunteerism with the statistical technique of factor analysis. Four factors related to blood donation experience as defined by Misje et al [19] are: 1. 'Value' motives which refer to altruistic and empathic reasons for volunteering (e.g. helping others, compassion, important cause). (2) 'Social' reasons reflect the normative influence of friends, family, or a social group that motivates people to volunteer. (3) 'Esteem' represents reasons for volunteering in order to feel better about oneself (e.g. feel better about myself, feel important) by helping others. (4) 'Understanding' refers to positive experiences associated with volunteering (e.g. 'explore own strengths', 'learn from experience'). Each of the four factors is assessed by corresponding items in the inventory. The individual respondent is expected to tick their perspectives on a Likert scale of 1-7 very strongly agree to very strongly disagree [19].

Data analysis

Data was analyzed using the statistical package for social science (SPSS) IBM version 25. Principal component factor analysis which is a data reduction method was employed to uncover the latent structure of motives driving blood donation. Factors were extracted using the varimax method (unrotated and rotated) and the number of retained factors was decided using the Eigen value criterion and a scree plot on the un-rotated factor matrix. Those factors with eigen value greater than 1.5 were retained. The factor matrix was then rotated by oblique rotation to obtain a simple factor pattern and only correlations (factor loadings) greater than ± 0.40 were considered. The factors' reliability was then tested using the Cronbach's alpha test which is a coefficient of reliability (consistency).

Multiple regression was conducted on responses to statements on motivational factors and potential deterrents. The combined influence of gender, number of donations and age was evaluated on each of the ordinal outcomes. P values were considered significant if less than 0.05.

RESULTS

Socio-demographic characteristics of the respondents

A total of 210 questionnaires were administered for this study, out of which 199 participants completely filled and returned the questionnaires, giving a response rate of 94.7%. Participants ranged in age from 17 -71 years (M= 30.8, SD= 10.7) with about two -thirds of the respondents (65.1%) aged between 21 and 40 years. Men constituted the majority of the respondents (60.3%). There was no significant difference in age of men compared to women. (Men= 31.7 ± 10.9, vs Women= 29.7 ± 10.6, t=1.3, p=0.197). Detailed socio-demographic characteristics of the respondents is shown in Table 1.

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency n = 199	Percentage (%)
Age Group (in years)		
<20	27	14.5
21-30	79	42.5
31-40	42	22.6
>40	38	20.4
Gender		
Female	79	39.7
Male	120	60.3
Religion		
Christianity	143	71.9
Islam	55	27.8
Traditional	1	0.5
Occupation		
Unemployed	8	4.0
Student	93	46.2
Unskilled	13	6.5
Semi-skilled	11	5.5
Skilled	74	37.2
Educational Level		
Non/Primary	5	2.5
Secondary	47	23.6
Tertiary	147	73.9

Number of Previous Blood Donation

The total number of previous donations ranged from 0 to 53; 37.2% were first-time donors while 125 (62.8%] were returning donors. Majority (n=95, 76%) have donated up to 10 times and only 2 have donated more than 50 times. Figure 1 shows the pattern of blood donation. The median blood donation among women was 3 (IQR 2-7), among men 5 (IQR 2-12). This difference was however not significant (p=0.154)

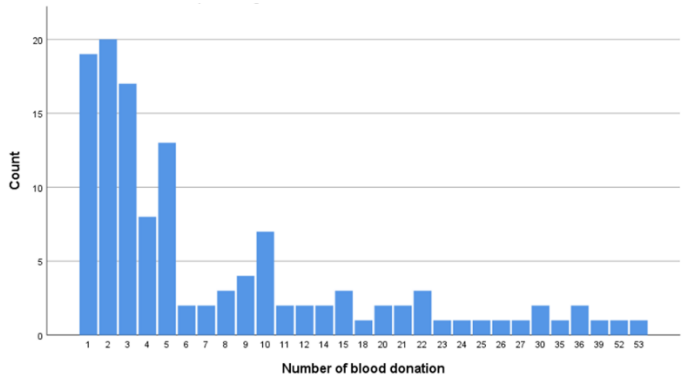

Figure 1: Histogram showing the number of blood donation per participants

Reasons for blood donation

Figure 2 shows the reasons for blood donation and indicated that voluntary non- remunerated donation accounted for majority (76.2%) of previous donation while autologous blood transfusion was the least reason for donation. Among those that donated for family replacement, donation for friends (17%), relation (17%), spouse (3%) and child [15] accounted for about half of the donations.

The reason that were given by those who had not donated before were having health challenges 8(10.8%), low packed cell volume 10(13.5%) and being underweight (9.5%). About half 35(47.3%) gave no reasons why they had not donated in the past.

Majority 172(84.4%) of the respondents were willing to encourage other people to donate blood and they had encouraged between 2 and 4 persons to do so. The group that was most encouraged to donate was the general populace 78(45.3%).

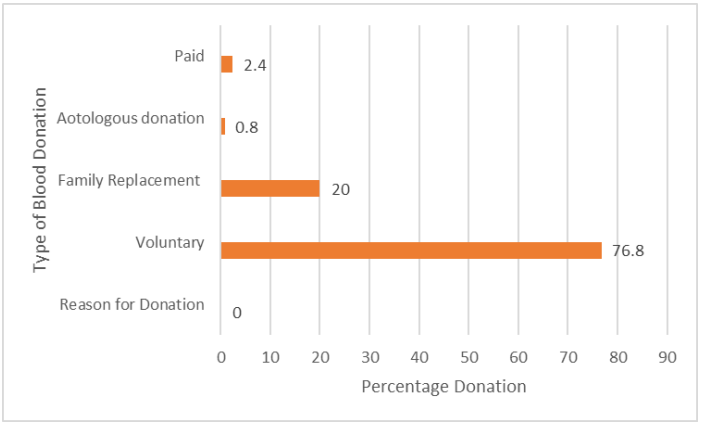

Figure 2: Bar Chat showing reasons for blood donation

Motives for donating blood

Principal component analysis (PCA) using varimax rotation method was employed to unravel the latent factors motivating blood donation in Ibadan. Two factors were extracted based on Eigen value greater than 1.5 and scree plot analysis. These two factors explained 50% of total variance. Significant components loading was set at least 0.4. Blood donors agreed more to altruistic or empathic reasons as basis for their donation. Factor analysis among the respondents showed that 87.4% agreed to the statement "G. I feel it is important to help others" and 83.6% agreed to "F. For me blood donation is primarily a moral duty". These two statements correspond to value factor and the responses suggest that most of the donors became voluntary donors because of their desire to help other people.

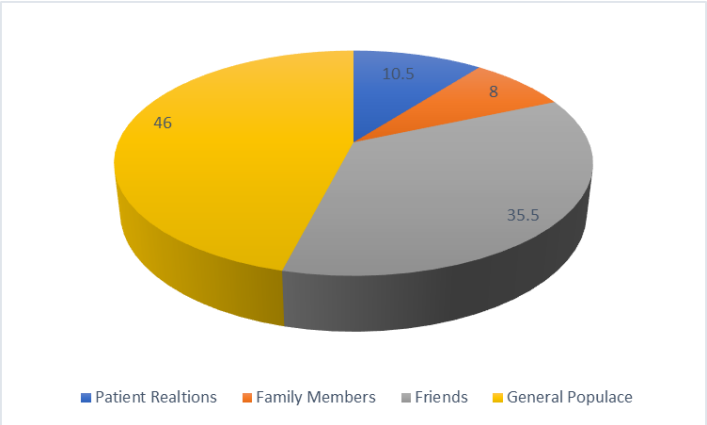

Figure 3: Pie chart showing the group that were encouraged to donate blood

However, other reasons apart from 'values reason, had a fair share as motivation for blood donation. The least motivating factor for blood donation was doctor's recommendation to do so because of high packed cell volume. Table 2 shows the detailed responses of donor to other motivational reasons for blood donation.

We proceeded to simplify the statements on motivation about blood donation shown in Table 2 by identification of the possible latent structure of motivation. Two factors met the latent roots (Eigen value >1 criterion) with a value of 4.86 and 4.68.

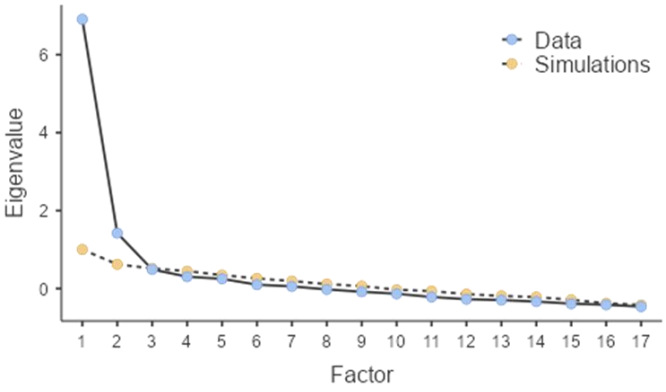

Figure 4: Screen plot of the Eigen values on the un-rotated Factor Matrix

The statements C, E, F, G, H, I, K, and M corresponds to the understanding factor while A, B, D, J N, O, P, and Q correspond to value factor. The first factor constituted 28.6% of the total variance while factor 2 accounted for 27.3%. Both retained factors explained 55.9% of the total variance.

The factor loading pattern matrix was rotated using the oblique rotation method which permits factor to be correlated with each other thus representing clustering of variables more accurately and therefore very much suited to uncover the latent structure of motives. Factors less than 0.4 were considered not important and discarded.

Table 2: Blood donors' perspectives on statements about reasons to donate blood

Wording of motivational statements of the questionnaire	Response						
	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
A. Donating blood is a way to make new friends	11.1%	6.0%	6.8%	25.6%	12.8%	28.2%	9.4%
B. I can learn how to deal with a variety of people	7.0%	8.7%	9.6%	17.4%	21.7%	27.8%	7.8%
C. I think blood donation benefits my own health	9.2%	4.3%	0.9%	8,.7%	18.5%	31.3%	33.0%
D. I want to help my organization donate blood	12.0%	7.4%	13.0%	23.1%	10.2%	20.4%	13.9%
E. I can learn more about the cause for which I am donating	6.8%	3.4%	3.4%	11.1%	24.8%	36.8%	13.7%
F. For me blood donation is primarily a moral duty	3.4%	3.4%	2.6%	6.9%	20.7%	39.7%	23.3%
G. I feel it is important to help others	5.9%	3.4%	0.8%	2.5%	14.3%	34.5%	38.7%
H. Donating blood makes me feel needed	7.7%	6.8%	2.6%	11.1%	18.8%	31.6%	21.4%
I. Donating blood makes me feel better about myself	4.4%	3.5%	3.5%	11.4%	17.5%	29.8%	29.8%
J. I am donating blood because my doctor says I have high PCV	38.7%	22.6%	20.8%	4.7%	0.9%	4.7%	7.5%
K. I am concern about those less fortunate than myself	6.0%	6.0%	2.6%	10.3%	17.2%	30.2%	27.6%
L. I can do something for a cause that is important to me	3.5%	2.7%	4.4%	5.3%	20.4%	31.9%	31.9%
M. Donating blood increases my self esteem	8.5%	5.5%	4.6%	26.6%	13.8%	28.4%	12.8%
N. Donating blood allows me to gain new perspectives on things	9.0%	5.4%	4.5%	26.1%	11.7%	28.8%	14.4%
O. My friends donate blood	8.3%	4.6%	2.8%	21.1%	25.7%	24.8%	12.8%
P. Others with whom I am close to place a high value on donating	9.3%	8.5%	4.7%	20.6%	20.6%	26.2%	12.1%
Q. People I know share an interest in donating blood	7.1%	5.4%	7.1%	13.4%	21.4%	33.9%	11.6%%

Table 3: Component Loadings

	Component		
	1	**2**	**Uniqueness**
G. I feel it is important to help others	0.934		0.181
F. For me blood donation is primarily a moral duty	0.877		0.294
K. I am concern about those less fortunate than myself	0.770		0.453
I. Donating blood makes me feel better about myself	0.726		0.360
L. I can do something for a cause that is important to me	0.696		0.435
C. I think blood donation benefits my own health	0.629		0.511
E. I can learn more about the cause for which I am donating	0.517	0.421	0.355
H. Donating blood makes me feel needed	0.493		0.548
M. Donating blood increases my self esteem	0.421	0.414	0.491
P. Others with whom I am close to place a high value on donating		0.786	0.339
B. I can learn how to deal with a variety of people		0.781	0.465
A. Donating blood is a way to make new friends		0.759	0.498
O. My friends donate blood		0.706	0.459
D. I want to help my school donate blood		0.680	0.491
Q. People I know share an interest in donating blood		0.666	0.472
N. Donating blood allows me to gain new perspectives on things		0.623	0.351
J. I am donating blood because my doctor says I have high PCV		0.507	0.794
% Variance explained	**28.6**	**27.3**	**55.9**
Eigen Value	**4.86**	**4.64**	
Cronbach's whole score 0.904			
Note. 'oblimin' rotation was used			

Factor 1

The first extracted factor was produced by the correlation between variables G, F, K, I, C, E, H and M. Variables G, F, K, and L correspond to the value factor of Volunteer Functions Inventory (VIF). Variable C corresponds to Understanding factor and the variables E, H, and M were related to the esteem factor. This factor explained the largest proportion of the variance (28.6%) and was labelled the self-esteem factor.

Factor 2

The second extracted factor was produced by the correlation between variables P, B, A, O, D, Q, N and J. Variables A, B, J and N correspond to the Understanding factor of Volunteer Functions Inventory (VIF). Variable E corresponds to Esteem factor and the variables O, P, and Q were related to the Social factor. This factor accounted for (27.3%) variance and was labelled the Social factor.

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy

The KMO score of 0.839 indicated that the sample size was adequate enough for the conducted factor analysis.

Bartlett's test of sphericity

The Bartlett's test of sphericity was significant indicating that the data was adequate for PCA [X^2 = 27162, df=361, p<0.001].

Predictors of self-esteem and social factors

We tested if sociodemographic characteristics predicted the two principal component factors identified namely self-esteem and social factors. The regression results indicated that age, gender, educational level, occupation and marital status did not significantly predict self-esteem factors [R^2 =0.11, F (14, 170) =1.6, P=0.08]. However, age group 21-30years (OR=1.4, p=0.189) and being married (OR=1.6, p=0.119) were most likely to have self-esteem factors to donate blood. Similarly, for social factor, we did not find any significant predictors [R^2 =0.05, F (14, 170) =0.69, P=0.782]. Nevertheless, age group 40 and above (OR=1.2) and not being married (OR=0.42) were most likely to have social factors influencing voluntary blood d0nation.

DISCUSSION

One of the cardinal features of an effective healthcare delivery system is availability of safe blood. To meet the blood transfusion demand of any society, there is need for adequate availability of blood pivoted on recruitment and retention of VNRD programme. Therefore, understanding the factors motivating blood donation in our environment where the proportion of VNRD is lower than WHO recommendation would be a step in the right direction in bridging this gap. In this study, we found that the majority of donors were aged 21-30 years. This finding is similar to many reports in Nigeria and other parts of Africa [20-24]. Similarly, male donors significantly outnumbered female donors, a finding that has been established by many studies globally [20-24]. The reason for this gender difference is attributable to lower haemoglobin concentration, reduced iron store available for erythropoiesis arising from increase iron demand form menstruation, pregnancy and lactation in women of child bearing age, the group which constitutes majority of blood donors.

The analysis of motivational factor revealed that most of the donors were doing so because they considered donation as moral duty and act of giving help to other in need. These motives were tagged as value factor embedded as self-esteem. We also found out that being married was an important positive predictor of self-esteem. The reason for this could be because marriage comes with responsibility of care for partners and maturity which could be extended to other aspects of living including blood donation.

The second identified motivational factor for blood donation was classified as social factor which is related to influence by friends and associates. It is a known and incontrovertible fact that peer influence modifies behaviour. In the light of this, effort to increase recruitment and retention of donors should focus on educating existing donors to motivate their peers and friends to join the donor pool. It appears prospective donors are encouraged to donate blood when spoken to by friends who have donated rather than by talks from donor recruitment units of our blood banks.

This study also revealed that fear of sight of blood and the time it takes to donate blood are two identifiable reasons for not wanting to donate. This is similar to findings by other workers [18,19,23-27]. Therefore, public education particularly by regular donors may have a synergistic effect on healthcare workers' effort to demystify the myths associated with blood donation practice

CONCLUSION

This study has shown that self-esteem and social factors and not only altruism are important motivational factors for recruitment and retention of VNRD. Therefore, donor drive campaigns and policy should be designed bearing in mind these factors. Our effort to increase the proportion of VNRD should be intensified on empirical evidence elucidated in this study and other similar studies. We therefore recommend interventional study to validate the finding of this study.

Highlights

1. Majority of the blood donors are males and young individuals aged 21-30 years.
2. The two identified motives for blood donation are self-esteem and social factors particularly peer influence from regular donors.

Conflict of Interest

The authors declare no conflict of interest.

Funding

None declared.

REFERENCES

1. World Health Organization Blood Safety Unit. World Health Organization. 2004. [Accessed Nov 16 2015]. Available at: http://www.who.int/bloodsafety .
2. World Health Organization. The clinical use of blood: Hand book, World Health Organization Blood Transfusion Safety 2008. [Accessed Nov 21 2015]. Available at: http://www.who.int/en/
3. World Health Organization. Towards 100% voluntary blood donation: a global framework for action. Geneva: World Health Organization; 2010
4. Weiser TG, Regenbogen SE, Thompson KD, Haynes AB, Lipsitz SR, Berry WR, et al. An estimation of the global volume of surgery: a modelling strategy based on available data. Lancet, 2008; 372:139–144.
5. Contreras M, Taylor CPF, Barbara JA. Clinical blood transfusion. Postgraduate haematology 6th Edition, Wiley-Blackwell 2011; 268-299.
6. Nwogoh B, Awodu OA, Bazuaye GN. Blood Donation in Nigeria: Standard of the Donated Blood. J Lab Physicians. 2012; 4: 94–97.
7. World Health Oganization. WHO Fact Sheets: Blood safety and availability; 10 January 2022. Available at http:// www.who.int/newsroom-sheets/detail/blood-safety-and availability
8. National Blood Transfusion Service, Federal Ministry of Health (Nigeria). The National Blood Policy Abuja: National Blood Trnasfusion Service, Federal Ministry of Health; 2006.

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: 227–229.
10. Kalibatas V. Payment for whole blood donation in Lithuania: the risk for infectious disease markers. Vox Sang 2008;94: 209–215.
11. Clark KA, Kataaha P, Mwangi J, Nyamongo J. Pre donation testing of potential blood donors in resource restricted setting. Transfusion 2005;45: 130-2.
12. Sarkodie F, Hassall O, Owusu-Dabo E, Owusu-Ofori S, Bates I, Bygbjerg IC et al. Improving the screening of blood donors with syphilis rapid diagnostic test (RDT) and rapid plasma regain (RPR) in low- and middle-income countries (LMIC). Transfus Med 2006; 27: 52-59.
13. Buyx AM. Blood Donation, Payment, and Non-Cash Incentives: Classical Questions Drawing Renewed Interest. Transfus Med Hemother 2009; 36:329–39.
14. WHO Expert Group. Expert consensus statement on achieving self-sufficiency in safe blood and blood products, based on voluntary non remunerated blood donation (VNRBD). Vox Sang 2012; 103:337-42.
15. U.S. Department of Health & Human Services. Agency for Healthcare Research and Quality Blood transfusions more than double since 1997. AHRQ News and Numbers; 2009.
16. Mascaretti L, James V, Barbara J, Cárdenas JM, Blagoevska M, Haricic M. et al. Comparative analysis of national regulations concerning blood safety across Europe. Transfus Med 2004; 14:105-11.
17. Directorate General for Communication. Blood donation and blood transfusions. Brussels, Belgium, 2009.
18. Vincent K, Esther C, Maxwell M, Chandiwana E. Factor Analysis of Motivational Factors among Experienced Blood Donors: A Case of High Schools in Manicaland Province Zimbabwe. J Blood Disord Transfus. 2019; 10: 429.
19. Misje AH, Bosnes V, Gasdal O, Heier HE. Motivation, recruitment and retention of voluntary non-remunerated blood donors: a survey-based questionnaire study. Vox Sang. 2005; 89:236-44
20. Olawumi, HO, Adewuyi JO. Blood Donation Trend in a Tertiary Hospital in Nigeria. SJMRP 2012; 1: 1.
21. Fasola FA, Kotila TR, Akinyemi JO. Trends in Transfusion Transmitted Viral Infections from 2001 to 2006 in Ibadan. Intervirology 2008; 51: 427-31.
22. Aworanti OW, Ogundeji SP, Oladele AQ, Okojie EA. Comparative Analysis of Blood donation practices among students at Nigerian University. OJMR 2022; 3: 42-49.
23. Bani M, Giussani B. Gender differences in giving blood: a review of the literature. Blood Transfus. 2010;8 :278-87.
24. Tagny CT, Owusu-Ofori S, Mbanya D, Deneys V. The blood donor in sub-Saharan African: a review. Transfus Med 2010; 20 :1-10.
25. Olaiya MA, Alakija W, Ajala A, Olatunji RO. Knowledge, attitudes, beliefs and motivations towards blood donations among blood donors in Lagos, Nigeria. Transfus Med. 2004; 14: 13-17.
26. Adewuyi JO, Olawumi HO. Factors in the low recruitment of voluntary blood donors among eligible Nigerians. Von Sang. 2006; 91:194.
27. Muthivhi TN, Olmsted MG, Park H, Sha M, Raju V, Mokoena T, et al. Motivators and deterrents to blood donation among Black South Africans: a qualitative analysis of focus group data. Transfusion Medicine 2015; 25: 249-58.