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Socio-Demographic Characteristics and Categorisation of Blood Donors in Zaria, North-Western Nigeria

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Abstract

Background: Blood donors are similar worldwide, with little variation among the three types of donors: voluntary blood donors, family replacement blood donors, and commercial blood donors. The characteristics of the donors ensure the safety of the blood to the recipients.

Aims and Objectives: This study aimed to determine the socio-demographic characteristics and categories of blood donors at ABU Teaching Hospital (ABUTH), Zaria, Kaduna State.

Materials and Methods: A proforma was used to collect the socio-demographics and the type of blood donation from the blood donors after obtaining informed consent.

Results: A total of 1022 blood donors were studied with a mean age of 31 years. The majority of donors were males (89.0%), most of whom were students (41.9%) and single (51.4%). The family replacement blood donors were the majority (90.0%), followed by voluntary blood donors (8.4%), and the least were the commercial blood donors (1.6%).

Conclusion: Blood donation is predominantly from male students, with family members being the most common source of blood. Therefore, there is a need for public education in schools, places of worship, and the mass media, especially during World Blood Donor Day celebrations, to inform the public about the benefits of voluntary blood donation.

Keywords: Socio-demographic, categorisation and donors

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Introduction

The history of blood donation is fascinating, as evident in the fact that blood donation has undergone many transformations, starting with the transfusion of animal blood to humans in the 17th century and evolving to human-to-human transfusions without screening in 1818 by James Blundell (1, 2). The trial and error of blood transfusion led to the present-day achievements in blood transfusion practice. Since 1975, the World Health Organisation (WHO) has aimed to obtain blood solely from voluntary, non-remunerated donors, not otherwise (3). However, this goal remains unachievable in developing countries like Nigeria, where voluntary non-remuneration blood donors account for only 10% of the blood donation and blood from these voluntary donors constitutes about 27% of the total blood collected (4). The story is different in developed countries like the UK, where approximately 10,000 voluntary donors are bled daily, and around half of them are young individuals within the 18-24 age group (5). This may be attributed to the enlightenment of the populace regarding blood donation.

In Nigeria, blood donation faces numerous challenges, starting with donor selection. Most health facilities in rural areas and some secondary health facilities lack a donor history selection questionnaire, resulting in non-standardised donor screening procedures. The donor history questionnaires aims to eliminate ineligible donors, thereby preventing the selection of unsuitable donors, wasting resources and enhancing blood safety. The importance of the donor questionnaire cannot be overstated, as Nigeria has three types of donors (6): family replacement donors, commercial donors and a few voluntary donors. To eliminate commercial donors, the donor questionnaire must be utilised consistently.

Research conducted in Abakaliki reveals that the types of blood donors are relatively consistent nationwide, with findings indicating that family replacement donors comprise the largest proportion, followed by commercial donors, while voluntary donors constitute the smallest proportion (7). Enosolease et al. (8) in Benin found opposing results, with the majority of the donors being commercial donors (95.3%), and the remaining percentage comprising family replacement donors. The scarcity of voluntary blood donors in Nigeria suggests that several factors, including ignorance, poverty, and lack of willingness to donate, are hindering blood donations among the populace.

In Nigeria, poverty is the primary factor driving the prevalence of commercial blood donors, as many individuals struggle to access balanced nutrition, specifically three square meals, which is essential for healthy blood formation (9). Even among willing blood donors, their haemoglobin levels are often below the required threshold for blood donation (10). This was reported in one of the research in Nigeria that about a quarter of blood donors were deferred due to low Packed Cell Volume (PCV) (10). The paucity of donors due to low PCV is not limited to developing countries alone, but also affects developed countries. Similarly, in a study conducted in Tanzania 21.1% of blood donors had low PCV (11).

Additionally, one of the primary reasons accounting for low voluntary blood donation in developing countries is the fear of being diagnosed with transfusion-transmissible infections, particularly Human Immunodeficiency Virus (HIV), due to widespread stigmatisation (12). Consequently, most potential blood donors hesitate to come forward unless a family member or friend requires blood urgently. This reluctance contributes to scarcity of voluntary donations. Other deterrents include fear of needle pricks, misconceptions about blood type demand, concerns about insufficient blood to spare, and the assumption that others have donated enough (13).

An understanding of the socio-demographic characteristics and categorisation of our blood donors is crucial for ensuring a safe and adequate blood supply. Hence, the study aims to determine the socio-demographic pattern and categorisation of blood donors in ABUTH Zaria, Kaduna State.

Materials and Methods

Study Setting

The study was conducted at the Haematology and Blood Transfusion department of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Kaduna State, Nigeria, over a four (4) months period from April to July 2017. The recruitment of blood donors was done by a convenience sampling method.

Study Design

This was a cross-sectional study in which socio-demographics and the categorisation of blood donor data for the study participants were collected using a proforma.

Study Population

All consenting blood donors who passed the blood donor requirements based on age, weight, blood pressure, and viral screen were enrolled.

Data Collection

Data was collected and entered into SPSS software version 20, and the software package was used for data analysis. Results were presented in Frequency distribution tables for the selected variables.

Ethical Approval

The study adhered to the Declaration of Helsinki by obtaining ethical approval from the ABUTH Zaria Health Research Ethics Committee (HREC). All blood donors signed a written informed consent.

Results

Table 1 presents the socio-demographic characteristics of the study participants. One thousand twenty-two (1,022) consenting donors were studied, with a mean age of 31 ± 10 years. Most blood donors were within the age range of 25-35 years and are predominantly male. Predominantly, the blood donors were single and students.

Table 1: Socio-demographics of blood donors

SN	Variables/Characteristics	Frequency n (%)
1	**Age group (Years)**	
	15-24	262 (25.6)
	25-34	416 (40.7)
	35-44	204 (20.0)
	45-54	86 (8.4)
	55-64	46 (4.5)
	65-74	8 (0.7)
		1022 (100)
2	**Gender**	
	Male	910 (89.0)
	Female	112 (11.0)
		1022 (100)
3	**Marital status**	
	Single	525 (51.4)
	Married	497 (48.6)
		1022 (100)
4	**Educational qualification**	
	Non formal	24 (2.3%)
	Primary	32 (3.1%)
	Secondary	570 (55.8%)
	Tertiary	396 (38.7%)
		1022 (100)
5	**Occupation**	
	Civil servants	180 (17.6%)
	Farmer	70 (6.8%)
	Trader	10 (1.0%)
	Business	262 (25.6%)
	Student	428 (41.9%)
	Artisan	60 (5.9%)
	Driver	12 (1.2%)
		1022 (100)

Tables 2 and 3 show the categorisation of blood donors, with the majority being family replacement blood donors (90.0%), followed by voluntary and commercial blood donors at 8.4% and 1.6%, respectively.

Table 2: Categorization of blood donors

SN	Type of donor	Frequency n (%)
1	Voluntary	86 (8.4%)
2	Family replacement	920 (90.0%)
3	Paid/commercial	16 (1.6%)

Table 3: Categorization of blood donors by gender

Gender	Type of donation	Frequency (%)
Male	Voluntary	68 (7.5%)
	Family replacement	826 (90.8)
	Commercial	16 (1.8)
Female	Voluntary	18 (16.1)
	Family replacement	94 (83.)
	Commercial	

Discussion

Blood donation is a lifesaving procedure; however, its effectiveness relies on the availability and willingness of individuals to donate, which ultimately determines the supply of blood and blood products in our blood banks. Historically, blood donation has undergone significant evolution. In its early years, animal blood was used, with lamb's blood supposedly treating fever and, on the other hand, allegedly calming madness (1). Therefore, the socio-demographic characteristics and categorisation of our blood donors are equally important.

The mean age of the blood donors was 31 years, similar to the finding of Durosimi et al in Ile-Ife (14). Notably, our modal age group was 25-34 years, indicating that our blood donors were predominantly young and enthusiastic about donating blood to save lives. This age group are generally less prone to nutritional deficiencies and other related health conditions commonly affecting the elderly.

In developing countries like ours, males predominantly donate blood, as evident in our study were 89% of the blood donors were male. This percentage is lower than the findings in Warri (97% male donors) (13) and that of Kano (99.8% male donors) (15) respectively. This trend suggests that women are increasingly interested in donating blood, despite concerns about developing anaemia due to repeated bleeding or blood donation. Nigeria like most low-income countries has a high proportion of women within the reproductive age, who often struggle with nutritional anaemia, pregnancy related anaemia and post-partum haemorrhage (16). Since our donors' modal age bracket falls within the reproductive age group, this explains the relatively low number of female blood donors.

The majority of the predominant blood donors had formal education, with 55.8% possessing secondary school education. This is in contrasts with findings of Ugwu et al in Enugu (17) and that of Dauda et al in Jigawa (18) who reported tertiary (63.3%) and primary (49.8%) education as predominant, respectively. Educational background plays a vital role in the willingness to donate blood, as educated individuals understand that blood donation saves lives.

The majority of the blood donors (41.9%) were students, consistent with findings of Ugwu et al in Enugu (18). The high representation of students among blood donors may be attributed to public enlightenment campaigns during blood donor drives in schools. This awareness fosters a willingness to donate blood to save lives.

Most of our blood donors (90.0%) were family replacement donors, which is similar to the findings of Nnachi et al. (7) in Abakaliki, but differs from the results of Enosolease et al. (8) in Benin. The family replacement donors comprise the majority of donations in most of the blood banks. These donors may be direct relatives of the recipient or, in some cases, paid donors hired by the recipient's family, often without the knowledge of the blood bank staff.

Conclusion

We concluded that our blood donors are predominantly male students who donate blood for family replacement purpose. To promote safer voluntary blood donation, further enlightenment campaigns are necessary through blood donor drives in schools, media outlets, and places of worship. These efforts should educate the public about the benefits of voluntary blood donation and encourage greater female participation, as female blood donation poses no harm whatsoever.

Limitation

The study could have been more robust if multiple centres were utilised to recruit blood donors; however, due to budget constraints and time, only one centre was employed.

Recommendation

Future research should involve multiple centres to gather more extensive and diverse data.

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Conflict of Interest Statement

The authors declare no conflict of interest

Source(s) of funding

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