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3 **Pattern of Blood Donation practices among Students of a Nigerian University.**

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5 **ABSTRACT**

6 **Background:** Blood transfusion service is an indispensable component of health care.
7 Despite the increased demand for blood, the supply of safe blood has been inadequate.

8 **Objective:** The aim of this study is to determine the pattern of blood donation practices
9 among medical students in Abakaliki.

10 **Methods:** This was a cross-sectional study carried out at Ebonyi State University Abakaliki
11 between October 2017 and March 2018. Stratified sampling technique was used to recruit
12 participants from among medical students using pre-tested, semi-structured, self
13 administered questionnaire, to assess their pattern of blood donation practices. Data was
14 analysed using SPSS software, version 20.

15 **Results:** One hundred and fifty eight medical students who participated in the study were
16 made up 90 males and 68 females. The most prevalent age group was 20 to 25years. Most of
17 the participants (93%) were single. The most common blood group was O Rh positive,
18 followed by A Rh positive then B Rh positive while AB Rh negative was the least. Majority
19 of the participants have never donated blood. The minority who have ever donated blood,
20 donated either once or twice and the donation was made for a family member or friend.

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22 **Conclusion:** Participants were found to have poor pattern of blood donation practices.
23 Misconception, fear, cultural and religious influences deter people from practicing voluntary
24 non-remunerated blood donation. Conducting awareness and enlightenment programs
25 regularly will help to keep them well informed and motivated to practice voluntary non-
26 remunerated blood donation.

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28 **Key words:** Blood donation, Students, Medical.

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30 **INTRODUCTION**

31 The timely availability of safe blood and blood products is essential aspect of medical
32 services. Blood is essential to life, circulates through the body and delivers essential
33 substances like oxygen and nutrients to the body cells. It also transports metabolic waste

34 products away from the body cells. Blood transfusion aims at the safe transfer of blood
35 components from the donor to the recipient. In spite of the relevance of blood donation, the
36 major challenge to the transfusion of blood is meeting the increasing demand for blood and
37 ensuring its constant supply. Shortage of blood is due to an increase in the demand, with
38 fewer voluntary blood donors.^[1,2]

39 The importance of blood transfusion in medical practice cannot be overemphasized as
40 millions of lives have been saved since the discovery of ABO blood groups. Despite
41 advances in medical research, ideal substitute for blood is yet to be found. Therefore blood
42 donation by humans is still the only source of blood and blood components. Since all blood
43 components and manufactured blood products originate with blood donors, the safety of
44 blood transfusion begins with careful selection of donors.^[3] Accordingly, donors should be
45 managed in a way that ensures high standard of care.

46 WHO estimates that blood donation by 1% of the population is generally the minimum
47 needed to meet a nation's most basic requirements for blood.^[4] Generally, donated blood
48 come from either voluntary non-remunerated donors, commercial donors or family
49 members. Family/ replacement donors are usually unaware about conditions that may make
50 them unsuitable to donate blood. Paid donors often lead lifestyles that expose them to the
51 risk of infections that could be transmitted through their blood and are motivated by
52 monetary gain which make them vulnerable to exploitation.^[5] An adequate and reliable
53 supply of safe blood can be assured by a stable base of regular, voluntary, unpaid blood
54 donors as they are motivated by altruism or social responsibility and are rewarded with
55 personal satisfaction and self esteem. One of the biggest challenges to blood safety
56 particularly in Sub-Saharan Africa is accessing safe and adequate quantities of blood and

57 blood products.^[6] Communities in Africa face several enduring challenges such as chronic
58 blood shortages, high prevalence of Transfusion-Transmissible Infections (TTIs), lack of
59 national blood transfusion services, problems with recruitment and retention of voluntary
60 non-remunerated blood donors, family replacement and commercial blood donation, and
61 inadequate use of pharmacologic and non-pharmacologic alternatives to allogeneic blood.^[7]
62 Addressing these challenges should be a central priority for most blood transfusion services,
63 particularly in Sub-Saharan Africa, to ensure the uninterrupted supply of safe blood and
64 blood products.^[8] Unlike developed countries, significant percentage of blood donation in
65 developing countries largely depend on family replacement and paid blood donors.^[9]
66 According to Nigeria Federal Ministry of Health survey, 25% and 75% of donated blood in
67 public sector is from commercial and family replacement donors while the reverse is the
68 case in private sector where 75% and 25% were commercial and family replacement donors
69 respectively and voluntary blood donors were negligible in both sectors.^[10] In our society,
70 overdependence on family replacement and remunerated donors to meet the increasing
71 demand for blood and blood products poses serious danger to potential recipient.^[11]
72 Young people are the hope and future of a safe blood supply in the world as they are healthy
73 and enthusiastic. As majority of them will be pursuing their education, schools and colleges
74 can become a good platform for motivational activities. By virtue of operating in health
75 institutions, medical students are expected to be aware of the scarcity of blood and blood
76 products despite increasing demand, the consequences of blood scarcity on health services
77 and are thus expected to donate as well as encourage voluntary blood donation among the
78 public. The objective of this study was to determine the pattern of blood donation practices
79 and the reasons for not donating blood among medical students.

80 **MATERIALS AND METHODS**

81 **Study design and area**

82 The study was a cross-sectional study carried out at Ebonyi State University, Abakaliki
83 South Eastern Nigeria between October 2017 to March 2018.

84 **Study population, sample size and sampling technique**

85 The study population comprised medical students who were undergoing their clinical
86 training. Using the Yaro Yamane formula for finite population, a minimum sample size of
87 169 was calculated. However, the sample size was increased by 10% giving 185 sample size
88 to take care of attrition. The participants were selected using stratified sampling technique.
89 The participants level of study formed the basis of each stratum. Sampling frame for the
90 study was 304 (comprising 109, 102 and 93 students in 400, 500 and 600 levels
91 respectively). Proportional allocation was used to select the number of students required to
92 partake in the study from each level. At each level, simple random sampling by ballot
93 method was used to select those who participated in the study.

94 **Data Collection/ Data Instrument**

95 The tool for data collection was a semi-structured self-administered questionnaire. The
96 questionnaire consisted of two sections. Section A comprised the socio-demographic
97 characteristics of the participants while section B comprised questions that sought to assess
98 the practice of voluntary blood donation among the participants. The questionnaires were
99 administered to the students who gave their consent. Questionnaires with incomplete
100 information were excluded.

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102 **Data Analysis**

103 Data was analysed using Statistical Package for Social Sciences (SPSS) software version 20.
104 Descriptive statistics was used to compute mean and standard deviation for continuous data
105 while the categorical data were expressed in frequency and percentages. Results were
106 presented in tables and chart.

107 **Ethical Consideration**

108 Ethical clearance was obtained from the Research and Ethics Committee of Ebonyi State
109 University, Abakaliki. In addition, informed written consent was obtained from each
110 participant before being included in the study.

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113 **RESULTS**

114 **Socio-demographic Characteristics**

115 A total of 158 medical students participated in this study. They comprised of 98 males and
116 60 females with a ratio of 1.6: 1. A higher proportion of the participants 128 (81%) were
117 within the age group 20- 25years (Table 1).

118 **Table 1: Socio-demographic Characteristics of Medical Students who Participated in**
119 **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

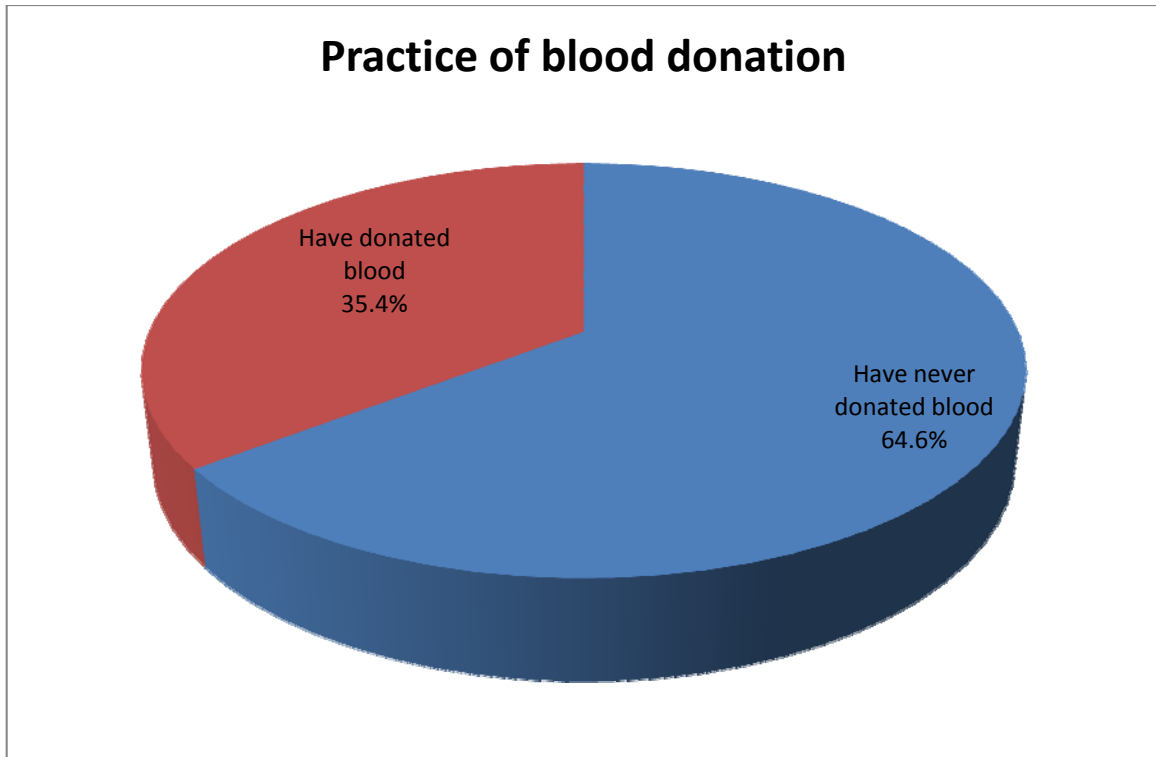
26 – 30	23	14.6
>30	5	3.2
Total	158	100
Marital status		
Married	7	4.4
Single	151	95.6
Total	158	100
Religion		
Christianity	158	100
Islam	0	0
Traditional	0	0
Others	0	0
Total	158	100

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121 **Blood Donation Practices among Medical Students.**

122 Majority of the students have never donated blood in the past (Figure 1). Among those who
 123 have ever donated blood, most of them are not regular blood donors as majority of them,
 124 69.6% and 19.6% have donated only once and twice respectively. Blood donation was made
 125 mainly for either a family member or a friend. Participants (35.4%) who have ever donated
 126 blood were mostly males (Table 2).

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129 **Figure 1: Medical students who have ever donated blood.**

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143 **Table 2: Blood Donation Practices among Medical Students**

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variable	Frequency	Percentage
Ever donated blood (n = 158)		
Yes	56	35.4
No	102	64.6

Number of times donated (n = 56)		
1	39	69.6
2	11	19.6
≥3	6	10.8
Blood donation by gender (n = 56)		
Female	10	17.9
Male	46	82.1
Donated without pay (n = 56)		
Yes	49	87.5
No	7	12.5
Who blood was donated for (n = 56)		
Family member (s)/ friend(s)	41	73.2
Stranger(s)	15	26.8

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146 Some of the reasons given for not donating blood include lack of information on blood
 147 donation and it's importance, don't have enough blood to donate, cultural/religious reasons,
 148 misuse of blood in the hospital, as shown in Table 3.

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Table 3: Reasons for donating or not donating blood

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Reasons for donating blood		
To save lives	147	93
As a reward for benefiting from donated blood	6	3.8
To get free medical check	3	1.9
To get money	2	1.3
Total	158	100
Reasons for not donating blood		
Lack of information on blood donation and it's importance	47	29.7
Don't have enough blood to donate	36	22.8
Fear of post-donation outcomes	15	9.5
Fear of needle	13	8.2
Cultural/religious reasons	12	7.6

Never thought of blood donation	10	6.3
Nobody asked for blood donation	8	5.1
Fear of contacting infections	7	4.4
Fear of discovering diseases	5	3.2
Misuse of blood in the hospital	3	1.9
Fear of sight of blood	2	1.3
Total	158	100

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161 **DISCUSSION**

162 Blood transfusion is a very crucial component of patient management. It has been life-
 163 saving procedure especially in cases of medical emergency and for patients suffering from
 164 various medical conditions. Voluntary blood donors are the source of safe blood. With the
 165 level of ignorance, misconception and fear regarding blood donation, there is a need for
 166 medical students to take the lead in this noble course by practicing regular voluntary blood
 167 donation to maintain a regular blood supply.

168 This study revealed that the most prevalent age group among the participants was 20 to
 169 25years. This collaborates with previous studies which reported that most blood donors are
 170 young people.^[9,12] In a developing country like ours, lack of information, poor blood donor
 171 recruitment and retention strategy and various misconceptions have resulted in a limited
 172 number of voluntary donors. This challenge can be tackled by adopting such recruitment
 173 methods that can overcome the misconceptions and also motivate the public to donate at an
 174 early age, so that they become lifelong voluntary donors. According to WHO, blood
 175 donation can be started safely from 17 years of age, so it is important that the young
 176 generation can be motivated to do this harmless task.^[13] Young persons are the most

177 potential blood donors in every society and students constitute a huge proportion of them.
178 These potential donors should therefore be well harnessed by sensitization and continued
179 health education using appropriate behaviour change communication models.

180 This study found that blood donation practice among the participants was poor as majority
181 of them have never donated blood in the past. This corroborates with findings of previous
182 studies which reported poor blood donation practices among the population studied.^[14,15]
183 Kaoje et al, in a study conducted at Sokoto, Nigeria reported that only 25% of the
184 participants had ever donated blood.^[14] Similarly, a study among health care workers in
185 Ethiopia reported that only 31.9% of the participants had ever donated blood in their life.^[15]
186 The poor blood donation practices could be a reflection of perception of the practice of
187 blood donation in the our society.

188 Another interesting finding of this study is that majority of the people who have ever
189 donated blood were males, with only a few females. This corroborates with findings of
190 previous studies which reported minimal contribution to blood donation among females.^[16]
191 Similarly, another study also reported that female donors contribute only a few compared to
192 male donors.^[17] This is an affirmation of the WHO report that there are more male
193 donors.^[13] The reluctance to donate blood among females is understandable because females
194 usually have a lower packed cell volume at certain times of the months due to menstrual
195 flow. Previous studies have reported that women experience 70% more deferral from
196 donation than men, because of higher frequencies of anaemia, issues related to pregnancy,
197 breast feeding and adverse reactions.^[18] Vasovagal attack and post donation fatigue appear
198 to be more common in females compared to males.^[19] Hence, general health of women need
199 to be improved by good nutrition and iron supplementation. Considering the fact more

200 females are venturing into the medical profession, the practice of blood donation should be
201 encouraged among females lending credence to the fact that anybody, irrespective of gender,
202 can save lives.

203 Moreover, majority of those who have ever donated among the participants were first time
204 blood donors as they have donated only once. Similar findings have been reported by
205 previous studies.^[20] This suggests that majority of the donors are not regular blood donors
206 and may have donated blood out of need. It is important to note that after the first donation,
207 the students could also donate again if properly motivated.

208 Majority of the people who have donated did that either to a family member or a friend.
209 Previous studies have given similar report.^[21,22] Studies have shown that there is scarcity of
210 regular voluntary blood donors in our environment.^[9] Many people only donate when there
211 is a compelling need to donate for a family member or a friend. This is different from what
212 is obtainable from the more civilized parts of the world where blood is readily available due
213 to voluntary blood donation practiced regularly by a higher proportion of their population.
214 Globally, it has been found that 80% of first time donors every year give up the practice of
215 blood donation.^[23] Reasons given for not donating blood among respondents who had never
216 donated were similar to other studies.^[22,24] This may imply that continuous enlightenment is
217 needed among this studied group and indeed, among the general population to highlight the
218 importance of blood donation, especially Voluntary Non-Remunerated Blood Donation
219 through various channels of communication.

220 Some of the reasons given by the participants why people do not donate blood voluntarily
221 include lack of information on blood donation and its importance, do not have enough blood

222 to donate, nobody asked for blood donation, cultural and religious reasons, misuse of blood
223 in the hospital, fear of post-donation outcomes. Our finding is similar to that of previous
224 study which reported that the major reasons for not donating blood were concern about the
225 sterilization of the equipment followed by unknown fear, the collection facility is far from
226 the place, not having enough time to donate.^[25] Likewise, other studies found that unknown
227 fear of blood donation, needle prick, misuse or selling of their donated blood by the blood
228 bank are some of the reasons for not donating blood.^[27, 28] All these reasons can be over
229 come by encouraging the students to donate blood and educating them about the
230 importance of donating blood. This can be attained by organising different educational
231 programs at that can shed light on the significance of blood donation. With proper
232 education, these erroneous beliefs and misconceptions will be corrected as evidenced from
233 the results of previous studies.^[29] This will lead to better understanding and correct
234 information about voluntary blood donation with improved voluntary blood donation
235 practices. The end result will be improvement in the availability of safe blood and blood
236 products for improved medical care services.

237 This study also revealed that the major reason for donating blood among the participants
238 was to save lives. Other studies conducted in different parts of the globe also reported that
239 the major motivation for donating blood by the participants was the intention to save
240 lives.^[21,30] Other reasons given by few of the participants for donating blood include as a
241 reward for benefiting from donated blood, to have free medical check and to get money.
242 Even though the practice of blood donation has been adjudged to be safe, some people still
243 have many wrong ideas about it as they want to donate due to their personal interest and not
244 voluntarily out of altruism. Such donors have been reported not to be safe as they can

245 conceal important medical information in a bid to achieve their goal irrespective of the
246 consequences.^[5]

247 **Conclusion**

248 The practice of regular voluntary blood donation among medical students was poor as most
249 of them have never donated blood in the past. Participants who have ever donated blood are
250 not regular blood donors as majority have donated only once. Blood donation in most cases
251 were made for either a friend or a family member. Most of the donors were males as females
252 were more reluctant to donate blood. Some of the reasons given by most of them for
253 donating blood include to save life. Some were motivated because they want to give rewards
254 for having benefited from donated blood in the past, others to get free medical check while a
255 few were motivated because they want to get money. Some of the reasons given by the
256 participants for not donating blood include lack of information on blood donation and it's
257 importance, don't have enough blood to donate, fear of post-donation outcomes, fear of
258 needle, cultural/religious reasons, never thought of blood donation, nobody asked for blood
259 donation, fear of contacting infections, fear of discovering diseases, misuse of blood in the
260 hospital, fear of sight of blood, among others.

261 There should be a regularly scheduled awareness creation and enlightenment campaigns to
262 allay the fears and misconception related to blood donation. Information on the benefits of
263 regular voluntary blood donation should be emphasized on a continuous basis to correct the
264 impression that blood donation is a harmful practice.

265 **Competing Interest**

266 The authors declare that no competing interests exist.

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