



## Prevalence, Perception and Determinants of Organ Donation among Students of Tertiary Institutions in Imo State, Nigeria

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### Authors' contributions

This work was carried out in collaboration between all authors. Authors CBD and URO designed the study. Authors CBD, URO and IO wrote the protocol and the first draft of the manuscript. Authors CMA, ENN and EN managed the literature searches. Authors ACI and NCO performed the statistical analysis. All authors read and approved the final manuscript.

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### ABSTRACT

**Introduction:** Organ donation has become an effective therapy for end-stage organ failure. There is considerable gap between the number of persons requiring organ and tissue transplantation and the number of organs and tissues available.

**Aim:** To assess the prevalence, perception, willingness and determinants of organ donation among

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students in tertiary institutions in Imo State, South East Nigeria.

**Methodology:** This was an institution based descriptive cross-sectional study. A total of 600 undergraduates participated in the study and were selected using multi-stage sampling technique. Data collection was done using a structured self-administered questionnaire. The responses were collated and analyzed using the Statistical Package for Social Sciences version 20. The level of statistical significance was set at p-value of  $\leq 0.05$ .

**Results:** The mean age of respondents was  $21.3 \pm 5.0$  years. Awareness of organ donation was 86.0% and major sources of information were electronic media (76.9%), print media (64.1%) and health workers (55.8%). Prevalence of organ donation in this study was 3.8% and majority of the recipients (74.0%) were family members. Organ donation was significantly associated with gender and tribe ( $p < 0.05$ ). Willingness to donate organ in this study was 23.1% and independent predictors of willingness to donate organ were gender (OR = 1.61,  $p = 0.02$ ), level of study (OR = 8.47,  $p = 0.04$ ) and nature of students' accommodation (OR = 4.59,  $p < 0.000$ ).

**Conclusion:** There is a huge gap between awareness of organ donation, the willingness to donate organ and the actual act of organ donation. Efforts should be intensified to inform the populace of the benefits and possible side effects of organ donation to enable them make informed decisions.

*Keywords: Perception; determinants; organ donation; students; tertiary institutions; Nigeria.*

## 1. INTRODUCTION

Organ donation is the process of removal and transplantation of viable tissues or organs from a living or dead donor to a living recipient in need of transplantation. This has become an effective therapy for end-stage organ failure (ESOF) [1]. The World Health Organisation (WHO) reports that a total of 126,670 organs were transplanted globally in 2015 including 84,347 kidneys, 27,759 livers, 7,023 hearts and 2,299 pancreas. Of the 126,670 organs transplanted in 2015, actual deceased donors comprised only 31,812 (25.1%) [2]. In Nigeria, only 39 organs were transplanted in 2015 and all were kidney transplants from living donors [2].

There is considerable gap between the number of individuals requiring organ and tissue transplantation and the number of organs and tissues available. In the United States of America (USA), only 33,612 (28.2%) organs were transplanted in 2015 out of 119,362 people on the list awaiting organ transplantation [3].

The rising number of patients presenting with ESOF in developing countries including Nigeria has led to the establishment of numerous transplant centres [4]. However, the prohibitive cost of renal dialysis and the cultural sensitivity to cadaveric organ donation has increased the reliance on living donors in Nigeria [4]. Transplantation also raises a number of medical ethics issues. These include; the definition of death, consent for heart beating cadaveric donors and compensation for living donors [4,5].

Several studies have been conducted in different part of the world regarding the awareness and attitude of the general public toward organ donation. A cross-sectional study by Franklin Barcellos in the urban area of Pelatos, Brasil revealed that willingness to donate organs was 52%. Most of the study respondents (80.1%) would authorize the donation of a relative's organ who has previously declared their willingness to do so. Willingness to donate organs was associated with younger age group, higher level of education and higher income [6].

An urban high schools based study among ethnically diverse students in USA revealed that educational sessions on organ donation significantly increased the willingness to donate organ [7]. A qualitative study among members of the Silk (Asian) Community in Coventry, United Kingdom found that the prevailing view among members of this community was supportive of transplantation, and organ donation was seen as a highly appropriate means of exhibiting the altruistic tradition within this community. The study also found that the barriers that exist to the idea of transplantation seem to have more to do with knowledge and understanding than with cultural or religious factors [8].

A cross-sectional study that analyzed the knowledge and attitude of people towards organ donation in Faisalabad, Pakistan observed a statistically significant association between knowledge of organ donation, educational and socio-economic status. Attitude towards organ donation was significantly associated with age, level of education and socio-economic status.

Television (46%) was the major source of information on organ donation and 90% of the respondents considered organ donation to be ethically correct. However, none of the respondents was an actual donor [9].

A study on knowledge regarding organ donation and willingness to donate among health workers in Ekiti, South Western Nigeria noted that despite good knowledge (82.5%) of the respondents, only 29.5% and 39.4% would be willing to donate and counsel potential donors respectively. Few respondents (19.4%) believed that organ transplantation is often effective and 63.4% believed they were permitted by their religion to donate. Permission by religion, good knowledge, readiness to sign donation cards, discuss organ donation and knowing somebody who had donated independently influenced willingness to donate an organ [10].

Another cross-sectional study conducted in Lagos to determine knowledge, attitudes and practice towards organ donation revealed that just 60% of the respondents were aware of organ donation and only 30% were willing to donate. Knowledge about organ donation was significantly higher among those with tertiary level of education and willingness to donate was significantly associated with younger age but not with gender or educational status [11].

A study by Iliyasu et al. in Kano city, Northern Nigeria on awareness and predictors of public attitude towards organ donation reported that 79.6% of the respondents had heard about organ donation and most (79.1%) were willing to donate an organ. Gender, educational attainment, marital status, religion and ethnicity were significant predictors of willingness to donate an organ. Reasons for willingness to donate included religion (51.2%), moral obligation (21.4%) and compassion (11.9%) [4].

In order to add to existing body of knowledge, this study was conducted to assess prevalence, perception and predictors of organ donation among students of tertiary institutions in Imo State, South Eastern Nigeria and to create further awareness among the populace on the importance of voluntary organ donation.

## **2. METHODOLOGY**

### **2.1 Study Area**

Imo state is one of the 36 states in Nigeria located in the South Eastern part of the country.

It has 27 local government areas with 5 being urban and 22 being rural. The State covers an area of 5100 square kilometre with a population density varying from 230 to 1400 persons per square kilometer [12]. There are several government owned institutions of higher learning in the state which includes: Imo State University, Owerri; Federal University of Technology, Owerri; Federal Polytechnic, Nekede; Eastern Palm University, Ogboko; Imo State Polytechnic, Umuagwo; Alvan Ikoku College of Education, Owerri; Imo State Technological Skills Acquisition Institute, Orlu; College of Health Science and Technology, Amaigbo, Nwangele; School of Nursing, Amaimo and Imo State College of Nursing and Health Sciences, Orlu.

### **2.2 Study Design and Study Population**

The study was an institution based descriptive cross-sectional study and the study population comprised full time undergraduate students of the selected tertiary institutions in the state.

### **2.3 Minimum Sample Size Determination**

Sample size was calculated using the Cochran formula for single proportion in study populations greater than 10,000; [13].

$$n = Z^2 P (1 - P) / d^2,$$

Where n is the minimum sample size, Z is the standard normal deviate at 95% confidence interval (1.96), P is the proportion of respondents with good knowledge of organ donation from a previous study (0.60) [11] and d is the level of precision required, set at 0.05. The calculated minimum sample size was 369. Considering a potential non-response rate of 10%, the minimum sample size required for this study was 406; however, 600 students were enrolled in this study comprising 300 students from each of the two selected institutions.

### **2.4 Sampling Technique**

A multi-stage sampling technique was employed in selecting the participants for this study. The first stage involved stratification of schools into universities and non-universities higher institutions using the list of higher institutions in Imo State as sampling frame. The second involved the selection of Imo State University

from the universities and Alvan Ikoku College of Education from the non-university higher institutions using simple random sampling by balloting. In the third stage, study participants were proportionately allocated to the two institutions using the information obtained from their student affairs departments. The number of respondents in each institution was proportionately allocated to the departments and to the study levels of the students using the registries obtained from Heads of departments as sampling frame. Systematic sampling technique was then used to select respondents. The respondents that were not available during the survey were replaced by the next person in the sampling frame.

## **2.5 Data Collection Tool**

A self-administered structured questionnaire was used to collect data from study participants between first week of August and last week of October 2017. The questionnaire was in 4 sections: demographic characteristics, awareness and knowledge regarding organ donation; attitude towards organ donation and factors affecting willingness to donate organ.

Knowledge and attitude of respondents towards organ donation was scored using a set of four questions to assess knowledge and fifteen questions to assess attitude. A score of  $\geq 80\%$  is regarded as good knowledge, 60 – 79% as fair knowledge and  $\leq 59\%$  as poor knowledge. Same grading applies to attitude.

## **2.6 Ethical Consideration**

Ethical approval for this study was obtained from Imo State University Teaching Hospital (IMSUTH) Ethical Committee. The study was done in line with ethical procedures as outlined in Helsinki declaration of 1964.

## **3. RESULTS**

### **3.1 Sociodemographic Characteristics of Respondents**

Six hundred (600) questionnaires were distributed for this study and all were duly filled and returned. Female students constituted 69.3% of the respondents. The mean age of the respondents was  $21.3 \pm 5.0$  years with

majority (53.0%) being within 20 – 24 years age bracket.

Most of the study participants (89.1%) were single and a higher proportion (38.5%) were in their second year of study. Social sciences, humanities and education contributed 70.2% of the respondents and Catholics (59.8%) and Pentecostals (21.8%) were the dominant religious denomination. Majority of the study participants (56.0%) live off campus and belong to a religious organisation (65.8%) Table 1.

### **3.2 Awareness and Knowledge of Respondents about Organ Donation**

Majority of the respondents (86.0%) were aware of organ donation and the common sources of information were; electronic media (76.9%), print media (64.1%) and health workers (55.8%). Most of them (81.8%) also knew the different organs that can be donated. Thirty nine point six percent (39.6%) of the respondents were of the opinion that organ donation is harmful to the donor but beneficial to the recipients and 82.8% of the study participants believe that diseases can be transmitted through organ donation. About two thirds of the respondents have satisfactory knowledge (69.8%) and attitude (72.8%) towards organ donation Table 2.

### **3.3 Prevalence and Reasons for Organ Donation among Respondent**

Only 3.8% of the respondents had ever donated organ and the organs donated were kidney (70.0%), liver (17.0%) and skin (13.0%). Majority (74.0%) of the organ recipients were family members and the common reasons for organ donation were to save life (60.9%) and avert death of a loved one (26.1%). Among non-donors, 23.1% were willing to donate and of these; 31.3% were willing to donate during their life time and 28.4% after death. Of those not willing to donate, anxiety (29.8%) and ignorance (16.9%) were given as the commonest reasons. Majority of the respondents (58.5%) were against financial inducement for organ donation and believed that organ donation is a worthy venture (50.8%). Suggested ways to improve organ donation by respondents included awareness creation (70.7%) and educating the masses (52.8%) Table 3.

**Table 1. Sociodemographic characteristics of respondents**

<b>Variable</b>	<b>Category</b>	<b>Frequency (%)n = 600</b>
<b>Gender</b>	Female	416 (69.3)
	Male	184 (30.7)
<b>Age group (years)</b>	15 – 19	108 (18.0)
	20 – 24	318 (53.0)
	25 – 29	114 (19.0)
	30 – 34	37 (6.1)
	35 – 39	15 (2.5)
	40 – 44	8 (1.3)
<b>Mean ± SD</b>	21.3 ± 5.0	
<b>Marital status</b>	Single	538 (89.1)
	Married	55 (9.1)
	Living with partner	5 (0.8)
	Divorced	2 (0.3)
<b>Year of study</b>	100 level	51 (8.5)
	200 level	231 (38.5)
	300 level	133 (22.2)
	≥400 level	185 (30.8)
<b>Faculty of study</b>	Social sciences	156 (26.0)
	Humanities	138 (23.0)
	Education	127 (21.2)
	Medical science	97 (16.1)
	Pure science	82 (13.7)
<b>Religious denomination</b>	Catholic	359 (59.8)
	Pentecostal	131 (21.8)
	Orthodox	94 (15.7)
	Jehovah witness	10 (1.7)
	Traditionalist	5 (0.8)
	Islam	1 (0.2)
<b>Tribe</b>	Igbo	556 (92.7)
	Yoruba	29 (4.8)
	Hausa	5 (0.8)
	Others	10 (1.7)
<b>Residence</b>	Hostel	183 (30.5)
	Off campus	336 (56.0)
	Living with family	81 (13.5)
<b>Membership of religious organisation</b>	Yes	395 (65.8)
	No	205 (34.2)

**3.4 Association between Sociodemographic Characteristics of Respondents and Lifetime Organ Donation**

Sociodemographic factors significantly associated with ever donated organ were gender ( $\chi^2 = 10.3, p = 0.001$ ) and tribe ( $\chi^2 = 19.0, p =$

0.000). A greater proportion of male respondents (7.6%) had donated organ in their lifetime compared to their female (2.2%) counterpart. Also, higher proportion of respondents from Hausa ethnic nationality (20.0%) had ever donated organ when compared to their Yoruba (17.2%) and Igbo (3.1%) counterparts Table 4.

**Table 2. Awareness and knowledge of respondents about organ donation**

<b>Variable</b>	<b>Frequency (%)</b>
<b>Aware of organ donation (n = 600)</b>	
Yes	516 (86.0)
No	84 (14.0)
<b>Source of information (n = 516)**</b>	
Electronic media	397 (76.9)
Print media	331 (64.1)
Health workers	288 (55.8)
School mates/ Lecturers	257 (49.8)
Internet	118 (22.9)
Parents/ Relatives	92 (17.8)
<b>Definition of organ donation (n=600)</b>	
Act of donating blood	39 (6.5)
Act of collecting blood	30 (5.0)
Act of donating organs	531 (88.5)
<b>Knowledge of organs that can be donated (n = 600)</b>	
Yes	485 (81.8)
No	115 (19.2)
<b>What organs can be donated (n = 485)**</b>	
Kidney	412 (84.9)
Liver	213 (43.9)
Heart	199 (41.0)
Lungs	88 (18.1)
Eye	87 (17.9)
Bone	60 (12.4)
Skin	45 (9.3)
Spleen	45 (9.3)
Pancreas	29 (6.0)
Others (Muscle, Hair, Intestine)	52 (10.7)
<b>Effects of organ donation known (n = 485)**</b>	
Harmful to the donor, beneficial to the recipient	192 (39.6)
Harmful effect	179 (36.9)
No idea	132 (27.2)
Beneficial effect	102 (21.0)
No effect	77 (15.9)
<b>Can diseases be transmitted through organ donation (n = 600)</b>	
Yes	497 (82.8)
No	97 (16.2)
Non response	6 (1.0)
<b>Diseases transmitted through organ donation (n = 497)**</b>	
HIV/AIDS	358 (72.0)
Hepatitis B virus	228 (45.9)
Cytomegalovirus	89 (17.9)
Tuberculosis	80 (16.1)
Herpes simplex virus	49 (9.9)
Rabies	45 (9.1)
Others (Malaria, Leukemia, Chicken pox)	10 (2.0)
<b>Grading of knowledge about organ donation (n = 600)</b>	
Poor (0 – 50%)	181 (30.2)
Fair (51 – 79%)	388 (64.7)
Good (≥ 80%)	31 (5.1)
<b>Grading of attitude towards organ donation (n = 600)</b>	
Poor (0 – 59%)	163 (27.2)
Fair (60 – 79%)	428 (71.3)
Good (≥ 80%)	9 (1.5)

**Table 3. Prevalence and reasons for organ donation among respondents**

<b>Variable</b>	<b>Frequency (%)</b>
<b>Ever donated organ before (n = 600)</b>	
Yes	23 (3.8)
No	577 (96.2)
<b>Organs donated (n = 23)</b>	
Kidney	16 (70.0)
Liver	4 (17.0)
Skin	3 (13.0)
<b>Person donated to (n = 23)</b>	
Family members	17 (74.0)
Strangers	4 (17.4)
Friends	2 (8.7)
<b>Main reason for donating your organ (n = 23)</b>	
To save a life	14 (60.9)
To avert death of a loved one	6 (26.1)
Financial gain	2 (8.7)
Voluntary	1 (5.0)
<b>Willingness to donate organ (n = 577)</b>	
Yes	134 (23.1)
No	443 (76.9)
<b>If willing, when (n = 134)</b>	
During life time	42 (31.3)
After life time	38 (28.4)
Both	54 (40.3)
<b>Persons you are willing to donate to</b>	
Family members	77 (57.5)
Strangers	44 (32.0)
Friends	13 (9.7)
<b>Reasons for not being willing to donate (n = 443)</b>	
No reason	141 (31.8%)
Anxiety	132 (29.8)
Ignorance	75 (16.9)
Fear of contacting infections	39 (8.8)
Religious/Cultural beliefs	36 (8.1)
Fear of surgery/procedure	20 (4.5)
<b>Do you support financial inducement for organ donation (n = 600)</b>	
Yes	219 (36.5)
No	351 (58.5)
<b>Respondents' opinion about organ donation (n = 600)**</b>	
Worthwhile to save live	305 (50.8)
Frightening operation and very dangerous	253 (42.2)
No ideas	125 (20.5)
Forbidden by tradition	36 (6.0)
Against humanity	23 (3.8)
<b>Suggested ways to improve organ donation (n = 600)**</b>	
Creating awareness	424 (70.7)
Educating the masses	317 (52.8)
Encouraging the people	275 (45.8)
Encouraging health facilities	264 (44.0)
Government participation	198 (33.0)

**Table 4. Association between sociodemographic characteristics of respondents and lifetime organ donation**

Variable donated organ	Ever		$\chi^2$	p-value
	Yes (%)n = 23	No (%)n = 577		
<b>Gender</b>				
Female	9 (2.2)	407 (97.8)	10.3	0.001
Male	14 (7.6)	170 (92.4)		
<b>Age group (years)</b>				
15 – 19	3 (2.8)	105 (97.2)	3.49	0.625
20 – 24	15 (4.7)	303 (95.3)		
25 – 29	5 (4.4)	109 (95.6)		
30 – 34	0	37 (100.0)		
35 – 39	0	15 (100.0)		
40 – 44	0	8 (100.0)		
<b>Marital status</b>				
Single	23 (4.3)	515 (95.7)	2.76	0.431
Married	0	55 (100.0)		
Living with partner		5 (100.0)		
Divorced		2 (100.0)		
<b>Year of study</b>				
100 level	1 (2.0)	50 (98.0)	2.85	0.416
200 level	9 (3.9)	222 (96.1)		
300 level	8 (6.0)	125 (94.0)		
≥ 400 level	5 (2.7)	180 (97.3)		
<b>Faculty of study</b>				
Social science	9 (5.8)	147 (94.2)	7.22	0.125
Humanities	3 (2.2)	135 (97.8)		
Education	2 (1.6)	125 (98.4)		
Medical sciences	3 (3.1)	94 (96.9)		
Pure science	6 (7.3)	76 (92.7)		
<b>Religious denomination</b>				
Catholic	16 (4.5)	343 (95.5)	3.47	0.628
Pentecostal	2 (1.5)	129 (98.5)		
Orthodox	5 (5.3)	89 (94.7)		
Jehovah witness	0	10 (100.0)		
Traditionalist	0	5 (100.0)		
Islam	0	1 (100.0)		
<b>Tribe</b>				
Igbo	17 (3.1)	539 (96.9)	19.0	0.000
Yoruba	5 (17.2)	24 (82.8)		
Hausa	1 (20.0)	4 (80.0)		
Others	0	10 (100.0)		
<b>Residence</b>				
Hostel	6 (3.3)	177 (96.7)	0.258	0.879
Off campus	14 (4.2)	322 (95.8)		
Living with family	3 (3.7)	78 (96.3)		
<b>Membership of religious organization</b>				
Yes	19 (4.8)	376 (95.2)	3.30	0.069
No	4 (2.0)	210 (98.0)		

**3.5 Association between Socio-demographic Characteristics and Willingness to Donate Organ**

Gender was also significantly associated with willingness to donate organ ( $\chi^2 = 5.65$ ,  $p =$

0.017). Other sociodemographic variables significantly associated with willingness to donate organ were marital status ( $\chi^2 = 9.33$ ,  $p = 0.025$ ), year of study ( $\chi^2 = 8.34$ ,  $p = 0.039$ ), faculty of study ( $\chi^2 = 45.4$ ,  $p = 0.000$ ) and nature of residence ( $\chi^2 = 27.3$ ,  $p = 0.000$ ) Table 5.



**Table 5. Association between sociodemographic characteristics and willingness to donate organ**

Variable	Willingness to donate organ		$\chi^2$	p-value
	Yes (%)n = 134	No (%)n = 446		
<b>Gender</b>				
Female	81 (20.3)	318 (79.7)	5.65	0.017
Male	53 (29.3)	128 (70.7)		
<b>Age group (years)</b>				
15 – 19	33 (30.6)	75 (69.4)	7.95	0.159
20 – 24	62 (20.8)	236 (79.2)		
25 – 29	25 (21.9)	89 (78.1)		
30 – 34	11 (29.7)	25 (70.3)		
35 – 39	3 (20.0)	12 (80.0)		
40 – 44	0	8 (100.0)		
<b>Marital status</b>				
Single	129 (24.9)	389 (75.1)	9.33	0.025
Married	4 (7.3)	51 (92.7)		
Living with partner	1 (20.0)	4 (80.0)		
Divorced	0	2 (100.0)		
<b>Year of study</b>				
100 level	1 (3.2)	30 (96.8)	8.34	0.039
200 level	50 (22.0)	177 (78.0)		
300 level	33 (26.0)	94 (74.0)		
≥ 400 level	50 (25.6)	145 (74.4)		
<b>Faculty of study</b>				
Social sciences	70 (40.5)	103 (59.5)	45.4	0.000
Humanities	19 (14.8)	109 (85.2)		
Education	25 (21.4)	92 (78.6)		
Medical sciences	9 (10.3)	78 (87.7)		
Natural sciences	11 (14.7)	64 (85.3)		
<b>Religious denomination</b>				
Catholic	84 (22.7)	286 (77.3)	3.32	0.651
Pentecostal	25 (25.0)	75 (75.0)		
Orthodox	24 (25.5)	70 (74.5)		
Jehovah witness	1 (10.0)	9 (90.0)		
Traditionalist	0	5 (100.0)		
Islam	0	1 (100.0)		
<b>Tribe</b>				
Igbo	125 (23.3)	411 (76.7)	1.03	0.795
Yoruba	7 (24.1)	22 (75.9)		
Hausa	1(20.0)	4 (80.0)		
Others	1 (10.0)	9 (90.0)		
<b>Residence</b>				
Hostel	55 (32.7)	113 (67.3)	27.3	0.000
Off campus	66 (26.6)	182 (73.7)		
Living with family	16 (9.6)	151 (90.4)		
<b>Membership of religious organization</b>				
Yes	85 (21.8)	305 (78.2)	1.15	0.284
No	49 (25.8)	141 (74.2)		

**3.6 Predictors of Willingness to Donate Organ among the Respondents**

On bivariate analysis, male undergraduates were more willing to donate organs compared to their female colleagues (OR = 1.61, p = 0.02).

Students in higher levels of study showed more favourable disposition to organ donation compared to those in their first year of study (OR = 10.34, p = 0.023). Students in faculty of education (OR = 2.36, p = 0.04) and social sciences (OR = 5.89, p < 0.000) were more

willing to donate organs compared to medical students. Study participants living off campus (OR = 3.42,  $p < 0.000$ ) and those in the school hostels (OR = 4.59,  $p < 0.000$ ) were also more willing to donate organs in comparison to those living with their family. Marital status is not an independent predictor of willingness to donate organ in this study Table 6.

#### 4. DISCUSSION

The level of awareness of organ donation among our study participants (86.0%) was slightly higher than the figure reported by Okoye et al., in Enugu (79.4%) [14] and Iliyasu et al., in Kano (79.6%) [4] but considerably higher than that obtained by Odusanya and Ladipo in Lagos (60.0%) [11]. Researchers in other African countries have reported awareness levels of 76.0% and 96.0% in Morocco [15] and South Africa [16] respectively. In the United States of America, the reported figure was also 86.0% [17] while in Europe, only 60.1% of respondents were reported by Hausteiner and Sellers to be aware of organ donation and transplantation [18]. These differences could be due to variations in methodology, study population characteristics and availability of local transplant services in the study areas.

The preponderance of electronic and print media as major sources of information on organ donation concurs with reports of previous studies in Nigeria [4,14] and elsewhere [9,18].

The prevalence of organ donation in this study was 3.8% with kidney constituting 70% of donated organs. World Health Organisation has reported that kidney is the commonest donated organ in Nigeria and globally [2]. There is paucity of data on prevalence of actual organ donation in Nigeria as opposed to willingness to donate organ though the World Health Organisation reported that only 39 organs (all were kidney) were transplanted in Nigeria in 2015 [2].

Respondents' willingness to donate an organ in this study is a paltry 23.1% despite a high level of awareness (86.0%). This figure is considerably lower than the 79.1% reported in Kano<sup>4</sup> but similar to the 30.0% and 33.6% reported from Lagos [11] and Enugu [14] respectively. However, the proportion of willing organ donors in our study is considerably higher than the figure from South Africa (8%) [16].

In Asia, the corresponding figures were 35.2%, 35.3% and 49.8% in Malaysia, [19] Pakistan [20]

**Table 6. Predictors of willingness to donate organ among the respondents**

Variable	OR (estimate)	95% (CI)	p-value
<b>Gender</b>			
Female	1.00		
Male	1.61	1.08 – 2.41	0.02
<b>Marital status</b>			
Single	1.66	0.08 – 34.85	0.743
Married	0.44	0.02 – 10.57	0.610
Living with partner	1.67	0.05 – 58.28	0.778
Divorced	1.00		
<b>Year of study</b>			
100 level	1.00		
200 level	8.47	1.13 – 63.69	0.038
300 level	10.53	1.38 – 80.31	0.023
≥ 400 level	10.34	1.37 – 77.84	0.023
<b>Faculty</b>			
Medical sciences	1.00		
Humanities	1.51	0.65 – 3.52	0.338
Education	2.36	1.04 – 5.34	0.041
Social sciences	5.89	2.77 – 12.52	<0.000
Natural sciences	1.49	0.58 – 3.82	0.407
<b>Residence</b>			
Living with family	1.00		
Off campus	3.42	1.90 – 6.16	<0.000
Hostel	4.59	2.50 – 8.44	<0.000

and China [21] respectively. In Turkey, [22] a figure of 47% was reported while in the United States of America, [17] a much higher figure of 96% was reported in Ohio.

The choice of family members as recipients of donated organs is in keeping with findings from other parts of Nigeria, [4,14] Africa [16] and Asia [20,21]. This may be attributed to trust of donors that their organs would be used genuinely to safe life of known recipient in need rather than for commercial and nefarious purposes. It is worthy of note that majority (58.5%) of respondents in this study were not in support of financial inducement for organ donation.

Gender and tribe were significantly associated with organ donation in this study. The apparent effect of tribe in the index study needs to be cautiously interpreted given that respondents from Igbo ethnic nationality made up over 90% of the study participants. The true effect of tribe could be found in settings where the proportions of the major ethnic nationalities were similar. Likewise, the finding that lifetime organ donation is higher among the Hausa ethnic community needs to be cautiously interpreted in view of the very small number of respondents from that ethnic nationality.

Significant predictors of willingness to donate an organ in our study were gender, level of study and nature of residence. Males were more willing to donate organs compared to females. The fact that organ donation is usually undertaken by relatively young people and most women of this age bracket will be preoccupied with childbearing could be responsible for this difference. Other researchers have observed that willingness to donate organ is significantly associated with gender, ethnicity, marital status, religion and level of education [4,11,20].

## 5. CONCLUSION AND RECOMMENDATION

It can be inferred that despite the high level of awareness about organ donation and transplantation in this study, the willingness to donate organ and the actual act of donating organ is still very low. The government, media houses and health workers should intensify effort towards giving the populace relevant information on organ donation and transplantation including the benefits and possible side effects to enable them make informed choices.

## CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the authors.

## ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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