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## Knowledge and Attitude of Healthcare Workers towards Kidney Transplantation in Nigeria

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**Abstract** *Background:* The knowledge and attitude of healthcare workers towards kidney transplantation are fundamental in the development and sustainability of transplant programs. Healthcare workers can influence the willingness to donate kidneys. *Objectives:* To evaluate the knowledge and attitude of Nigerian healthcare workers regarding kidney transplantation.

*Methods:* A prospective study of doctors and nurses at the 43<sup>rd</sup> Paediatric Association of Nigeria Conference in Ile-Ife, in January 2012 was carried out. Self-administered questionnaires on the knowledge and attitude of healthcare workers towards kidney transplantation were given to participants practising in Nigeria to complete.

*Results:* The questionnaire completion rate was 93.6% (n = 217).

Majority (45.2%) of the respondents were aged 35 – 44 years; 59.0% had been in practice for more than 10 years and 83.9% were Christians. On the average, the healthcare workers responded correctly to 63.9% of the questions testing on knowledge and 50.7% were willing to donate kidneys. There was significant relationship between willingness to donate and profession (p = 0.001) but not with age, gender, tribe, religion or duration of practice.

*Conclusion:* Nigerian healthcare workers have good knowledge and favourable attitude towards kidney transplantation. We recommend training of health workers to further improve their knowledge on renal transplantation.

**Key words:** Kidney Transplantation, Healthcare workers, Nigeria

### Introduction

Renal transplantation is the standard and preferred treatment option for patients with end stage renal disease (ESRD) with potential for improved quality of life and increased life expectancy.<sup>1</sup> However, renal transplantation is still hampered by shortage of kidneys in both developed and developing countries due to discrepancy between the demand and supply of donor organs.<sup>2,3</sup> In the United States of America (USA), more than 82,000 patients are on the renal transplant waiting list.<sup>2</sup> The shortage of organs for transplantation is largely attributed to unwillingness of the public to donate organs including the kidney. Previous studies had noted that culture, socio-demographic characteristics such as age, gender, education and economic status; superstition; religion and uncertainty about the safety of the donation process were the major barriers to kidney donation.<sup>4,5</sup> These barriers are more glaring in developing nations where most of the transplants are performed with live donor kidneys.<sup>6</sup> In Nigeria, renal transplantation is the only form of organ transplantation that is been carried out with living relatives as donors. With the ex-

pansion of renal transplantation services in Nigeria with the inclusion of children, the need for cadaveric kidneys will eventually become inevitable.

Healthcare workers (HCW) play an important role in influencing potential kidney donors and their relatives; HCW are the most critical link in the organ procurement process.<sup>7</sup> The knowledge and attitude of HCW regarding renal transplantation is thus very crucial in the development, improvement and sustenance of transplant programmes.

Evanisko et al<sup>8</sup> in a previous study in the USA reported that two thirds of critical-care staff members lack the necessary knowledge and training in organ donation and transplantation. In Nigeria, Aghanwa et al<sup>9</sup> in a previous study noted that over 90% of health workers in Ile-Ife had correct knowledge of renal transplantation while Anochie et al<sup>10</sup> reported that less than half of the medical students in Port Harcourt were willing to be living kidney donors. This present study was therefore conducted to evaluate the knowledge and attitude of Paediatric HCW in Nigeria towards kidney transplantation.

## Materials and Methods

This was a prospective cross-sectional study conducted during the 43<sup>rd</sup> Paediatric Association of Nigeria Conference (PANCONF) in Ile-Ife, Osun State, Nigeria on January 25<sup>th</sup>, 2012 among paediatric doctors and nurses practising in Nigeria who were attending the conference.

Verbal consent was obtained from the participants. Self-administered questionnaires on knowledge and attitude towards renal transplantation were given to the participants to complete and collected immediately. Data collected were analysed using SPSS version 17 (SPSS Inc., Chicago, Illinois, USA). The differences among groups were assessed using Pearson Chi-square tests and the Fisher's exact test where appropriate. P values of less than 0.05 were considered statistically significant.

Logistic regression was performed to explore the association between the respondent's willingness to donate a kidney and co-variants (age, gender, tribe, religion, profession and duration of practice). Respondents who answered 'undecided' regarding their willingness to donate were excluded from the logistic regression analysis.

## Results

### Response rate and Demographic Characteristics of the Study Population

Of the 250 questionnaires distributed, 234 (93.6%) were returned; 16 (6.8%) had missing information and were discarded. The remaining 217 (92.7%) questionnaires met the study criteria and were analysed. They comprised of 80 (36.9%) males and 137 (63.1%) females with a Male: Female ratio of 1:1.7. Table 1 shows the characteristics of the study population. Majority (70.1%) of the respondents were less than 45 years and 182 (83.9%) were Christians. Over 70% of the respondents were doctors of which 64 (39.8%) were consultants and 97 (60.2%) were residents. The respondents were practicing in 32 (of the 36) States in Nigeria; majority (85.7%) in the Tertiary/Teaching hospitals.

### Knowledge regarding kidney transplantation

A total of 185 (85.3%) respondents knew the definition of kidney transplantation. Table 2 shows the respondents knowledge regarding renal transplantation. A total of 154 (71.0%) respondents were aware of renal transplant centres in Nigeria; those in the Tertiary/Teaching hospital were more aware than those in the Private clinics and Primary Health Care (PHC) centres but the difference was not statistically significant ( $p = 0.453$ ). However, 19.8% respondents were aware of renal transplantation being done in children in Nigeria and less than half of the respondents knew the correct age at which children should be transplanted. Overall, doctors were more knowledgeable than nurses and the differences were statistically significant ( $p = 0.000$  in all cases). On the average, the healthcare workers responded correctly to 63.9% of the five questions on knowledge of renal

**Table 1:** Characteristics of the Study Population

Parameter	Number	Percentage
<i>Gender</i>		
Male	80	36.9
Female	137	63.1
<i>Age group (years)</i>		
< 25	3	1.4
25 – 34	51	23.5
35 – 44	98	45.2
45 – 54	50	23
> 55	15	6.9
<i>Religion</i>		
Christians	182	83.9
Muslims	35	16.1
<i>Tribe</i>		
Ibo	56	25.8
Yoruba	92	42.4
Hausa	20	9.2
Others	49	22.6
<i>Profession</i>		
Doctors	161	74.2
Nurses	56	25.8
<i>Place of Practice</i>		
Tertiary/Teaching		
Hospital	186	85.7
General Hospital	15	6.9
Private Hospital	12	5.5
PHC Centre	4	1.8
<i>Duration of Practice (years)</i>		
< 5	33	15.2
5 – 10	56	25.8
>10	128	59

Key: PHC = Primary Health Care

**Table 2:** Correct Knowledge of Health Workers Regarding Renal Transplantation

Parameter	Number	Percentage
Definition of renal transplantation	185	85.3
Awareness of renal transplantation centres in Nigeria	154	71
Indication for renal transplantation	172	93.7
Awareness of renal transplant in children in Nigeria	43	19.8
Age at which children should be transplanted	107	49.3

### Attitude towards renal transplantation

A total of 201 (93.1%) respondents agreed that patients should receive donated organs to prolong life. However, only 160 (73.7%) respondents will approach relatives of potential donors to discuss the possibility of kidney donation. Table 3 shows the attitude of doctors towards renal transplantation compared to that of the nurses. The doctors were more willing to approach relatives of potential donors, donate a kidney, receive a kidney transplant, support cadaveric kidney transplant and sign an organ donation card compared to nurses; the differences were statistically significant in all cases ( $p < 0.05$ ). Participants practicing in the teaching/tertiary institutions and those that have practiced for less than five years were more willing to approach the relatives of a potential donor, although, the differences were not

statistically significant ( $p = 0.666$  and  $0.445$  respectively). Reasons given for not approaching relatives of potential donors included high cost of renal transplantation (66.7%); religious beliefs (17.5%); fear (12.3%); feelings for the relatives and lack of legislation for renal transplantation in Nigeria (1.8% each respectively).

Of the 165 (76.0%) respondents that are willing to receive kidney transplant, 140 (84.9%) will prefer living donor kidneys, 2 (1.2%) will prefer cadaveric kidneys while 23 (14.0) will accept either a living donor or cadaveric kidney.

Attitude	Total N = 217	Doctors (N = 161)	Nurses (N = 56)	p value
Approach relatives of potential donor		No (%)	No (%)	
Yes	160 (73.7)	126 (78.3)	34 (60.7)	0.01
No	57 (26.3)	35 (21.7)	22 (39.3)	
Willingness to donate a kidney				
Yes	110 (50.7)	91 (56.5)	19 (33.9)	0.001
No	31 (14.3)	15 (9.3)	16 (28.6)	
Undecided	76 (35.0)	55 (34.2)	21 (37.5)	
Willingness to receive Kidney Transplant				
Yes	165 (76.0)	129 (80.1)	36 (64.3)	0.015
No	52 (24.0)	32 (19.9)	20 (37.5)	
Support cadaveric Kidneys for Transplant				
Yes	154 (71.0)	127 (78.9)	27 (48.2)	0
No	63 (29.0)	34 (21.1)	29 (51.8)	
Willingness to sign an organ donation card				
Yes	93 (42.9)	79 (49.1)	14 (25.0)	0
No	57 (26.3)	32 (19.9)	25 (44.6)	
Undecided	67 (30.9)	50 (31.1)	17 (30.4)	

#### Willingness to donate kidneys

A total of 110 (50.7%) of the respondents were willing to donate a kidney; 98% of which would prefer to donate to their children and spouse, whereas only 42.9% were willing to sign an organ donation card.

Table 4 shows the respondents willingness to donate kidneys according to demographic characteristics. Medical doctors were significantly more willing to donate kidneys compared to nurses ( $p = 0.001$ ). Also, being a male, in the age group 35 – 44 years, a Muslim, an Hausa and in practice for 5 – 10 years were associated with increased willingness to donate, although, the differences was not statistically significant ( $p > 0.005$  in all cases).

Logistic regression analysis was performed to assess the association between different variables and willingness to donate. In both the crude and adjusted models, being a medical doctor was strongly associated with willingness to donate kidneys (crude odds ratio [OR] = 5.109; 95% confidence interval [CI] = 2.161 – 12.080;  $p = 0.000$  and adjusted OR = 5.831; 95% CI = 1.769 – 19.219;  $p = 0.004$ ); there was no significant relationship between willingness to donate kidneys and age, gender, tribe, religion or duration of practice as shown in Table 5.

**Table 4:** Willingness to donate Kidneys according to Demographic Characteristics

Parameter	All (%)	Yes (%)	No (%)	Undecided (%)	P value
<i>Gender</i>					
Male	80(36.9)	44 (55.0)	6 (7.5)	30 (37.5)	0.097
Female	137(63.1)	66 (48.2)	25 (18.2)	46 (33.6)	
<i>Age group (years)</i>					
< 25	3 (1.4)	0 (0.0)	0 (0.0)	3 (100.0)	0.272
25 – 34	51 (23.5)	27 (52.9)	7 (13.7)	17 (33.3)	
35 – 44	98 (45.2)	55 (56.1)	10 (10.2)	33 (33.7)	
45 – 54	50 (23.0)	21 (42.0)	11 (22.0)	18 (36.0)	
> 55	15 (6.9)	7 (46.7)	3 (20.0)	5 (33.3)	
<i>Religion</i>					
Christians	182 (83.9)	91 (50.0)	29 (15.9)	62 (34.1)	0.278
Muslims	35 (16.1)	19 (54.3)	2 (5.7)	14(40.0)	
<i>Tribe</i>					
Ibo	56 (25.8)	33(58.9)	3 (5.4)	20 (35.7)	0.155
Yoruba	92(42.4)	40 (43.5)	19 (20.7)	33 (35.9)	
Hausa	20 (9.2)	12 (60.0)	1 (5.0)	7 (35.0)	
Others	49 (22.6)	25 (51.0)	8 (16.3)	16 (32.7)	
<i>Profession</i>					
Doctors	161 (74.2)	91 (56.5)	15 (9.3)	55 (34.2)	0.001
Nurses	56 (25.8)	19 (33.9)	16 (28.6)	21 (37.5)	
<i>Duration of Practice (years)</i>				12	
< 5	33 (15.2)	18 (54.5)	3 (9.1)	936.5)	0.288
5 – 10	56 (25.8)	31 (55.4)	4 (7.1)	21 (37.5)	
>10	128 (59)	61 (47.7)	24 (18.8)	43 (33.6)	

**Table 5:** Logistic Regression Modelling for Willingness to Donate a Kidney

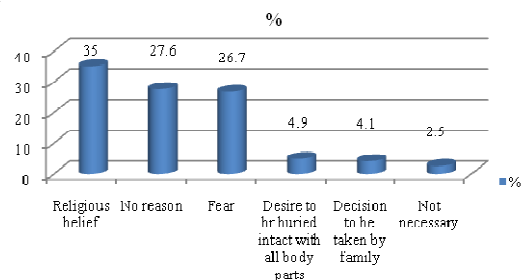
Variable	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	pvalue
Sex (male)	0.360 (0.137 - 0.949)	0.39	0.842 (0.2666 - 2.658)	0.769
Age	0.818 (0.176 - 3.804)	0.798	0.835 (0.135 - 5.166)	0.846
Religion (Muslims)	0.330 (0.073 - 1.504)	0.152	0.295(0.058- 1.500)	0.141
Tribe	5.700 (0.690 - 47.101)	0.106	1.561 (0.585 - 4.165)	0.374
Profession (doctor)	5.109 (2.161 - 12.080)	0	5.831 (1.769 - 19.219)	0.004
Duration of practice	2.361 (0.637 - 8.752)	0.199	1.742 (0.441 - 6.887)	0.428

Key: OR = Odds Ratio; CI = Confidence Interval

#### Reasons for Unwillingness to donate a Kidney

The commonest reason for unwillingness to donate a kidney for transplantation was religious belief (35%) as shown in Figure 1. Other reasons included fear (26.7%) and desire to be buried intact with all body parts (4.9%).

**Fig 1:** Reasons given by Health workers for Unwillingness to donate a Kidney



## Discussion

The present study demonstrated that HCW in Nigeria have good knowledge of renal transplantation. This finding contrast with previous report by Evanisko et al<sup>8</sup> in the USA, Molzahn<sup>11</sup> in Canada and Alsultan et al<sup>12</sup> in Saudi Arabia who reported poor knowledge of HCW regarding organ donation. The findings of the present study however is comparable to the report by Akgun et al<sup>13</sup> who found a good level of knowledge(87.3%) about kidney transplantation among healthcare professionals in Turkey. The higher level of knowledge about kidney transplantation reported by Akgun et al<sup>13</sup> compared to the present study may be attributed to the fact that the study was conducted among HCW practicing in a Country with established transplant centres and programmes. The present study also showed that knowledge about kidney transplantation increased with increasing medical education as medical doctors were more knowledgeable than nurses regarding renal transplantation. This finding is similar to previous reports by Schaeffner et al<sup>14</sup> among medical students and physicians regarding organ donation in Germany and Akgun et al<sup>13</sup> among physicians and nurses in Turkey.

The finding that HCW in the present study had positive attitude towards organ donation was similar to previous reports in Nigeria<sup>15</sup> and in other parts of the world.<sup>16,17</sup> The proportion of HCW in the present study willing to approach and discuss with relatives of potential kidney donors is also very impressive and encouraging as this may contribute to increase in organ procurement for transplantation in Nigeria. The findings in the present study however contrast with those reported in Canada<sup>11</sup> and Germany<sup>14</sup> where majority of the HCW indicated reluctance and felt insufficiently prepared to approach relatives of potential organ donors.

The fact that high proportion of HCW in the study supports cadaveric kidney transplantation is very encouraging considering the possible inevitable need for cadaveric kidney donation in future in Nigeria. This finding is in consonant with that reported by Rios et al<sup>17</sup> and Akgun et al<sup>13</sup> in Spain and Turkey respectively.

In the present study, about half of the HCW reported willingness to donate their kidneys. This finding is higher than the 39.3% reported among medical students in a previous study in Port Harcourt<sup>17</sup> and the 30.0% reported by Odusanya et al<sup>18</sup> among the general population in Lagos, Nigeria. It is however lower than the 57.0% reported in Saudi Arabia<sup>12</sup> and much lower than the 75.6% and 62.5% reported by Agaba et al<sup>15</sup> and Aghanwa et al<sup>9</sup> respectively among HCW in previous Nigerian studies. The present study was conducted among diverse HCW from different institutions while the previous studies were conducted in single centres in Nigeria and Saudi Arabia with established renal units. This may explain the lower value of willingness to donate kidneys among HCW in the present study. In a study by Ndlovu et al<sup>19</sup> in South Africa, 80% of the living-related potential donors indicated willingness to donate a kidney. This higher value compared to the pre-

sent study may be attributed to the fact that the study was carried among relatives of patients in need of a kidney transplant in a centre with established solid organ transplantation programmes.

However, despite the reported willingness to donate kidneys documented in the present study, only 42.9% of the respondents were willing to sign an organ donation card. Reasons given for not signing an organ donation card included fear of death and mistrust on health professionals who may harvest viable organs in an unconscious state even before they are certified dead.

There was no significant association between age and willingness to donate organ in the present study. This is similar to previous reports by Aghanwa et al<sup>9</sup> in Nigeria, Bilgel et al<sup>20</sup> in Turkey and Schaeffner et al<sup>14</sup> in Germany, but contrast with previous reports by Odusanya et al<sup>18</sup> in Nigeria and in the other parts of the world<sup>21,22</sup> where younger age was found to be significantly associated with willingness to donate organs. The reason for the disparity in these findings cannot be readily ascertained. Also, the present study documented no significant association between willingness to donate kidneys and gender. This is similar to a previous report in Nigeria<sup>18</sup> but contrast with previous reports in the western worlds where higher proportion of females were more willing to be potential donors.<sup>21,23</sup>

The lack of significant association between religion and willingness to donate a kidney contrast previous report which showed that religious beliefs play a role in determining one's view of organ donation.<sup>5,24</sup> The findings of the present study is however encouraging and favourable to the sustenance of renal transplantation programme in Nigeria considering the fact that religious beliefs has greatly interfered in some health programmes in the country.<sup>25</sup>

Being a medical doctor was the only independent predictor of willingness to donate kidneys in the present study. This observation has been reported in previous studies in other parts of the world.<sup>13,14</sup> A study showed that the educational level of health professionals was positively related to their personal willingness to donate organs.<sup>26</sup> A higher medical educational level is associated with greater knowledge and a more positive attitude towards organ donation.

The strengths of our survey included the high response rate of the participants and the fact that the study was conducted among HCW practicing in different centres in Nigeria. The findings of this study therefore reflects the knowledge and attitude of a wider population of HCW in Nigeria towards renal transplantation compared to previous studies<sup>9,15</sup> which were conducted in single centres in Nigeria. The present study however only determined willingness of HCW to donate kidneys which is different from actual rate of donation. Willingness to donate does not necessarily translate to actual donation rate.<sup>27</sup> Further studies need to be conducted to determine the actual rate of kidney donation by HCW in Nigeria.

## Conclusion

In conclusion, Nigerian HCW have good knowledge and favourable attitude towards renal transplantation. Majority of the HCW expressed willingness to donate a kidney and being a medical doctor is the strongest independent factor associated with willingness to donate kidneys. We recommend the establishment of nationwide education programmes on renal transplantation for the training of HCW in each centre in Nigeria to further improve their knowledge on renal transplantation.

## Author's Contributions

Both authors conceived the study, designed the study instrument, prepared and approved the final version of the manuscript.

**Conflict of Interest:** None

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