ATTITUDES TOWARD KIDNEY DONATION

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The Renal Unit of Obafemi Awolowo University Teaching Hospital Ile-Ife in Southwest Nigeria intends commencing a kidney transplantation program. This cross-sectional study aimed at examining the willingness of Nigerians to be living-related kidney donors. Three hundred and sixteen Nigerians (96 first-degree relatives of end-stage renal disease patients, 69 rural dwellers and 151 health workers) were interviewed regarding their willingness to donate kidneys using an interview schedule designed to elicit socio-demographic information, knowledge about kidney transplantation and attitude toward kidney donation.

Sixty-two percent of health workers, 52.1% of the patients' relatives and 27.1% of rural dwellers expressed willingness to donate. Higher proportions of health workers and patients' relatives—compared with the rural dwellers—were willing to donate a kidney to their children, full-siblings and parents ($P<0.05$). The level of awareness about kidney transplantation was highest among health workers and least among rural dwellers ($P<0.001$). Altruism was the primary motivation for those willing to donate a kidney.

The most important reason for refusal to donate was fear of adverse health consequences. Among the rural dwellers, never-married persons were more willing than the married to donate ($P<0.05$).

Programs aimed at increasing awareness about the safety of kidney donation, reducing adverse beliefs about kidney donation, and encouraging altruistic tendencies will increase the availability of kidney donors. (*J Natl Med Assoc.* 2003;95:725–731.)

Key words: attitude ♦ kidney donation ♦ Southwest Nigeria ♦ transplantation

The prevalence of chronic renal failure (CRF) is very high in Nigeria, as it accounted for between 2.8% and 11% of medical admissions to Nigerian tertiary hospitals.[1-2] Unfortunately, kidney transplantation, which has been accepted globally as the definitive treatment of end-stage renal disease (ESRD)[3]—the ultimate outcome of CRF—is not available in this country. Compared with other treatments for ESRD, kidney transplantation provides a remarkably good quality of life,[4,5] good cognitive functioning,[6] improved sexual performance [7], and lack of disfiguring changes to the body.[8] The major drawbacks of kidney transplantation, however, are immunological graft rejection and low availability of donor kidneys. Transplantation with living-related donors' kidneys yields a 95% graft survival rate within the first year, and it offers the most successful outcome.[9]

Even in western societies where kidney transplantation has been practiced for decades, there are still difficulties with organ procurement,[10,11,12,13,14] which has resulted in lower-than-expected rates of transplantation. Among the factors responsible for this difficulty are uncertainty about the safety of donation,[15,16,17] perceptions and ethical values of health professionals,[11] lack of appropriate skill in approaching family members for a kidney[18] and the presence of medical conditions in some potential donors.[19,20]

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Misconceptions, fear, and adverse socio-cultural beliefs have been identified as some of the factors responsible for the unwillingness to donate a kidney in developing countries with transplantation programs.[16,21]

In most West African renal centers, only dialysis and conservative management are undertaken. The socioeconomic, cultural and political situations in this subregion are quite different from those of the western societies where kidney transplantation has become established.[22] Unlike the west—where literacy levels are close to 100%—in West Africa, the literacy rate is generally low, though it seems to be rising with time.[23]

A majority of the West African population resides in the rural areas, where difficulties in accessing western-type health care facilities encourage the patronage of alternative medicine. Various social indices influence the level of acceptance of western-style health care services, especially those involving high technology.[21,23] The social indices included literacy rate and economic status. The extent to which they will influence kidney transplantation—especially kidney donation and procurement—is not known.

The renal center at the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC) Ile-Ife, in southwestern Nigeria, is planning to embark on a renal transplantation program using the kidneys of living-related donors. It is therefore desirable to know how willing Nigerians are to serve as living-related donors before embarking on this program.

Therefore, this cross-sectional, descriptive study has two goals: to explore the extent to which southwest Nigerians are willing to donate a kidney by comparing distinct segments of the population, and to determine the sociodemographic factors associated with the willingness to donate a kidney.

METHOD

The study was carried out at the Renal Unit of OAUTHC Ile-Ife and at Imesile, a nearby rural community, in southwest Nigeria. Ile-Ife is a Yoruba town located 229 km from Lagos, the commercial capital city of Nigeria. It is an urban area surrounded by rural settlements. Imesi-Ile is one of such rural settlements and is located in a mountainous area some 65 km from Ile-Ife.

Patients are referred to the Renal Unit from other clinical departments within the teaching hospital and also from outlying health facilities in the catchment areas. The cases seen in this unit include glomerulonephritis, hypertensive disorders, nephrotic syndrome, acute renal failure and chronic renal failure from various causes.

The renal care facility consists of a 10-bed ward, a hemodialysis unit and an outpatient clinic. This unit began hemodialysis in 1989 and, two years later, commenced continuous ambulatory peritoneal dialysis (CAPD). There is a plan to commence renal transplantation in the near future. It is envisaged that living-related donors will be the main source of kidneys for this program, while other community members will also be expected to contribute.

SUBJECTS

These included three groups of subjects. The first group consisted of first-degree adult relatives (full-siblings, children and parents) of consecutive ESRD patients (P) seen at the unit between June 1, 1996 and May 31, 1998. A first-degree relative was chosen for interview for each patient.

The second group consisted of adult rural dwellers (R) residing at Imesi-Ile. They were selected using a systematic sampling method. The first subject to be chosen was the first adult encountered in the house closest to the center of the town, then subsequently the first adult met by the research team in every third house. Also at the marketplace, the first adult seen in the stall closest to the center of the town was chosen and subsequently from every third stall. The access to this rural settlement was made difficult by its terrain, limiting the sample size to 69 individuals. The rural dwellers were selected for comparison because they were relatively naïve to western health care system.

The third sample consisted of health workers (H) selected from within the teaching hospital, apart from the Renal Unit. The subjects on the staff list were first stratified into three subgroups: a clinical subgroup—which included nurses, pharmacists and doctors; an ancillary subgroup—which included orderlies and cooks; and an administrative subgroup—which included typists and administrators.

Thereafter, a lottery-type random sampling method was used to select those included in this group. This was done by first numbering the subjects in each subgroup. These numbers were written on pieces of paper, which were picked without replacement until approximately 50 individuals were obtained for each subgroup. Health workers

Table 1. Sociodemographic Characteristics of the Population Studied

	RURAL DWELLERS (R) n=69	PATIENTS' RELATIVES (P) n=96	HEALTH WORKERS (H) n=151
AGE (mean + sd)	36.48 + 18.55 years	35.06 + 14.19 years	32.97 + 7.32 years
GENDER			
Male	17 (24.6%)	37 (38.5%)	84 (55.6%)
EDUCATION			
None*	22 (31.9%)	13 (13.5%)	0
Primary	19 (27.5%)	14 (14.5%)	13 (8.6%)
Secondary	21 (30.4%)	26 (27.1%)	19 (12.6%)
Tertiary*	7 (10.2%)	43 (44.8%)	119 (78.8%)
INCOME (Naira)			
(Mean+sd)*	1935.45 + 450.25	4032.73 + 1932.40	4482.72 + 2250.31
MARITAL STATUS			
Married**	54 (78.3%)	57 (59.4%)	87 (57.6%)
Single	9 (13.0%)	32 (33.3%)	57 (37.7%)
Others+	6 (8.7%)	7 (7.3%)	7 (4.7%)
RELIGION			
Christianity***	53 (76.8%)	76 (79.2%)	138 (91.4%)
Islam	16 (23.2%)	20 (20.8%)	13 (8.6%)

+Others included the separated, divorced and widowed
*Statistically significant difference across all three study-groups (P<0.05).
**Higher proportion in rural dwellers, compared to either of the other groups (P<0.05).
***Higher proportion in the health workers, compared to either of the other groups (P<0.05).

were chosen as a comparison group because they have been exposed to the western-style health care system. Subjects in the health workers' and rural dwellers' groups who were currently or had relatives suffering from any renal conditions were excluded from the study. In all the groups, only those who consented were included.

PROCEDURE

This study was carried out with the approval of the hospital's research and ethical committee. After pilot testing and modification, a standard interview schedule designed to elicit sociodemographic information, awareness of kidney transplantation and attitude toward kidney donation was administered on every subject by one of the two research assistants who had been trained by the principal investigator (HSA). This was done with either the English or Yoruba version of the instrument depending on the language understood by the subject.

The Yoruba version was produced by the process of back-translation. The two research assistants were fluent in both English and Yoruba. Each interview took approximately 15 to 20 minutes. Prior to administering the instrument on the sample, the level of agreement between the two research assistants was determined. The research assistants administered the interview schedule on 12 subjects independently and inter-rater reliability was found to be high (k=.84).

Relatives of the ESRD patients were interviewed either while visiting the patients during admission or when accompanying the patients to the follow-up clinic. For the rural dweller, the interview was conducted either in the individual subjects' homes or in the market square. Interviews of rural dwellers were carried out on alternate Monday mornings, which were the local market days. This was the time that a majority of the rural dwellers would be at home rather than on the farm where they normally spent the remaining weekdays. The health workers were interviewed at their duty posts.

The interview schedule was designed to elicit information on sociodemographics, knowledge

about and attitudes toward kidney donation. Among the information sought in the sociodemographic section were: age, gender, level of education, income, marital status, religion and occupation. For the demographic characteristics, the questions were open-ended, and no options were provided. The section on knowledge about kidney donation sought—through "yes" or "no" questions—information on the number of kidneys per human, the ability of a kidney to sustain life, and awareness about kidney transplantation.

Questions concerning attitude toward kidney donation assessed—through "yes" or "no" responses—the willingness to serve as a living donor of a kidney, generally and to specific family members. The reason for accepting or refusing to donate a kidney was also sought through the use of open-ended questions, with no options provided. In this study, income was recorded in the Nigerian currency, Naira. As at the time of the study, the exchange rate was 50 naira to one U.S. dollar.

STATISTICAL ANALYSIS

The data obtained from the three samples were compared using frequency counts, one-way analysis of variance (ANOVA), student's t-test and a chi-squared test with the assistance of Epi Info version 6, a computer statistical package. The critical level of statistical significance was set at 0.05, and the analysis was two-tailed.

RESULTS

General Description of Data

The 316 subjects interviewed consisted of 96 first-degree relatives of ESRD patients, 69 adult rural dwellers and 151 health workers.

Sociodemographic characteristics of the three groups included the frequencies and means for various sociodemographic variables across the three study groups are as shown in Table 1.

While there was no statistically significant difference in age between groups ($F=1.84$, $P=0.16$, NS), significantly higher proportions of males ($X2=6.86$, $df=1$), those with tertiary education ($X2=30.09$, $df=1$) and Christians ($X2=7.58$, $df=1$) were found among the health workers compared with patients' relatives ($P<0.01$); and in the educational attainment of patients' relatives compared with that of rural dwellers ($X2=25.8$, $df=3$, $P<0.001$). The mean income of health workers was significantly higher than that of patients' relatives ($t=5587.04$, $df=245$, $P<0.05$), while that of the latter group was higher than that of rural dwellers ($t=134377.79$, $df=163$, $P<0.05$) (Table 1).

The patients' relatives consisted of traders, artisans, clerks, teachers, farmers and housewives. The rural dwellers comprised mainly farmers, artisans, traders, housewives and the unemployed.

Knowledge of Kidney Transplantation (see Table 2)

While a higher proportion of health workers than patients' relatives and rural dwellers groups knew the correct answers regarding the number of kidneys per human (H vs. P, $X2=18.11$; H vs. R, $X2= 20.54$) ($df=1$, $P<0.001$) and the sustainability of life by one kidney (H vs. P, $X2=48.95$; H vs. R, $X2= 58.88$) ($df=1$, $P<0.001$), the differences between these latter groups were not statistically significant. Nearly all health workers (91.4%) had some knowledge of kidney transplantation. However, only 52.1% of patients' relatives and 24.8% of rural dwellers had such knowledge. The differences were statistically significant across the three groups (H vs. P, $X2=49.88$; H vs. R, $X2=101.38$; P vs. R, $X2=12.54$) ($df=1$, $P<0.001$).

Willingness to Donate a Kidney

While there was no significant difference regarding the willingness of health workers and patients' relatives to donate a kidney, each of these groups was significantly more willing to donate than the rural dwellers (H vs. R, $X2=22.85$; P vs. R, $X2=9.94$) ($df=1$, $P<0.05$). A similar pattern of response was obtained when the willingness to donate a kidney to specific persons—such as a child, full-sibling or parent—was considered.

Nearly all of the individuals across groups that were willing to donate had altruistic motives (health workers 97%, patients' relatives 97% and rural dwellers 93%) rather than monetary or other material motives. Reasons for declining to serve as a living-related donor included concern with the adverse effects on their health of parting with a kidney (health workers 78%, patients' relatives 67% and rural dwellers 61%), fear of reincarnating with only one kidney (health workers 11%, patients' relatives 16% and rural dwellers 17%), and fear of incurring God's wrath (health workers 11%, patients' relatives 17% and rural dwellers 22%) by interfering with His will for the ESRD patient.

Table 2. Knowledge about and Attitude Toward Kidney Donation

	RURAL DWELLERS (R) n=69	PATIENTS' RELATIVES (P) n=96	HEALTH WORKERS (H) n=151
Number of kidney per person			
Correct	60 (87.0%)[a]	85 (88.5%)[ab]	151 (100%)[ac]
Wrong	9 (13.0%)	11 (11.5%)	0
Previous knowledge of kidney transplantation			
Present	17 (24.6%)[a]	50 (52.1%)[ab]	138 (91.4%)[bc]
Absent	52 (75.4%)	46 (47.9%)	13 (8.6%)
Life sustainable by one kidney?			
Yes	17 (24.6%)[a]	33 (34.4%)[ab]	119 (78.8%)[ac]
No	52 (75.4%)	63 (65.6%)	32 (21.2%)

[a] Rural dwellers, when relatives differed from health workers.
[ab] Relatives, when they did not differ from rural dwellers but differed from health workers.
[ac] Health workers, when they did not differ from rural dwellers but differed from relatives.
[bc] Health workers, when they were differed from rural dwellers and relatives.

Sociodemographics and Kidney Donation

Among sociodemographic variables under consideration—age, education, gender, income, marital status and religion—only marital status was significantly associated with the willingness to donate a kidney among rural dwellers ($X2=5.91$, $df=1$, $P<0.05$). Among the rural dwellers that expressed the desire to serve as living donors, 62% were not married, while 25% were married. No significant relationship was found between each of the other sociodemographic variables considered and the willingness to donate in either the patients' relatives or health workers group.

DISCUSSION

In the present study, the proportions of the health workers (62.3%) and patients' relatives (52.1%) who indicated their willingness to serve as living donors were midway between that of a report from the western world (50%)[25], and another from black South Africans (80%)[26]. The proportion of potential living donors in the rural dwellers group (27.5%) in this study was remarkably lower than that obtained from the western society.[25] The proportions of health workers and patients' relatives that are willing to donate a kidney in the present study seem impressive, especially as most countries are experiencing a decline in the number of potential donors.[10,28]

The high rate of potential donors observed among health workers in the present study is desirable, as low rate of organ procurement has been blamed on the negative attitude of health professionals toward organ donation in advanced countries.[11,18] Health professionals have always constituted a critical element in the process of organ procurement.[11,27] This relatively high rate of potential donors among health workers in the present study is probably an indication that this factor will not constitute a major obstacle in organ donation and procurement in this country when kidney transplantation programs commence.

The observation of higher proportions of potential donors among the patients' relatives and health workers compared with that of rural dwellers is noteworthy, especially as their levels of awareness about kidney transplantation followed a similar pattern. From this observation, it may be inferred that knowledge of transplantation is positively influential on the willingness to donate a kidney. This finding is therefore consistent with that of a western study where the knowledge of kidney transplantation was found to be influential on the willingness to donate a kidney.[8]

Other factors—such as knowledge of the correct number of kidneys per human and the sustainability of life by a kidney—considered in the pres-

ent study, seemed not influential. Perhaps creating awareness in the public about kidney transplantation will improve the willingness to donate a kidney. This awareness campaign will be more effective if the safety of the procedure is emphasized, as a majority of those that declined to donate did so mainly for fear of adverse health consequences associated with the procedure.

Lack of significant difference between the rates of willingness to donate kidneys by patients' relatives and health workers indicated that knowledge of transplantation could not be the only influential factor, as the latter group was far more exposed to this variable than the former. It is possible that having a terminally ill relative could be another factor contributing to the positive disposition to kidney donation.

It is important to note that material consideration did not seem to be a reason for donation—rather a vast majority of donors were motivated by altruism. This fact was supported by the observation that income had no significant effect on the willingness to donate. Kidney donation was clearly not perceived as a profit-making venture in this setting. This is surprising, since unethical practices often associated with kidney procurement in advanced countries are based on financial consideration. On the other hand, those that declined being living-related donors in this sample did so not only due to fear of adverse health consequences but also because of adverse sociocultural and religious beliefs they held. Some of these are listed in the Results section.

In this study, age was not associated with a willingness to donate a kidney in each of the three groups. This finding contradicts those of early studies in the west, where the younger a subject is the greater his willingness to donate.[22,28] The reason for this difference between our finding and that of western studies is not clear and therefore open to speculation.

Similar to the findings from western societies, whereby religious beliefs were found to be influential on the willingness to donate organs and tissues, this study revealed negative impact of some sociocultural and religious beliefs on the willingness to donate a kidney.[14,22] Such beliefs included fear of reincarnating with one kidney (instead of two) and fear of incurring the wrath of God by interfering with His will for the ESRD patient.

Nevertheless, there was no association between type of religion and willingness to donate a kidney in the present study. A similar study conducted in Sweden had demonstrated an inverse relationship between religious interest and the desire to donate a kidney.[28] Unfortunately, the present study did not explore the relationship between religious interest and willingness to donate a kidney. Consequently, our study could not be compared with western studies on this variable.

Lack of association between gender and willingness to donate in the present study is not in agreement with the finding from western societies, where a higher proportion of females are potential donors.[29] This finding may be a reflection of a lesser degree of female emancipation in Nigeria compared with western societies. This may also explain in the present study the observed low tendency among married rural dwellers—mostly female—to donate a kidney.

The sociodemographic characteristics of the groups studied were comparable with regard to their mean ages. However, the groups differed in their educational attainment and earning power. These attributes would be difficult to balance out in a study involving distinct population groups. Nonetheless, for inclusion in the study sample, the selection of distinct population groups—such as rural dwellers, patients' relatives and health workers—enabled the effects of their peculiar characteristics on the willingness to donate a kidney to be examined. Undoubtedly, a descriptive study of this type highlighted associations among variables with less rigor than a case-controlled study would.

Only the willingness to donate was examined in this study. This variable is different from the actual donation rate, which was not evaluated in this study. Some disparity has been found between these two variables in some studies.[9,18,25] The distinction between willingness to donate and the rate of donation should therefore be borne in mind in the application of the findings from this study to policy formulation.

In conclusion, this study supports the findings from western societies of the positive influence of human dimensional factors—such as awareness of kidney transplantation and altruism—on the willingness to donate a kidney.[28,29] The extent of patients' relatives and health workers' willingness to donate a kidney indicated that the availability of donor kidneys would not constitute an impediment to sustaining a renal transplantation program in this setting. This is especially true if the program goes hand-in-hand with public awareness programs aimed at correcting adverse beliefs and misconceptions concerning kidney donations.

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