

# Kidney Donation and Transplant in Benin: University of Abomey-Calavi Students' Perception

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## ABSTRACT

**Objective:** To analyze University of Abomey-Calavi students' perception about kidney donation and transplant.

**Method:** It was a descriptive and analytical cross-sectional study conducted in four higher education centers from 15<sup>th</sup> May to 17<sup>th</sup> August, 2017. All students who met the inclusion criteria and gave their informed consent were included in the study. Data were collected with a sheet designed on the basis of different variables and processed by Excel 2010 and SPSS 21.

**Results:** The study covered four hundred and one students, with a sex ratio=1.25. The mean age was 21.68 ± 2.32 years. The majority of respondents were medical students (77.6%). They had good knowledge of diseases requiring transplant (85.8%), and 95.26% of them were familiar with the transplantable organs. Over half of the respondents (77.3%) agreed to donate their kidney after death. For two-thirds (70.32%) of the students included in the study, there is need for public awareness in view of the successful implementation of such activity. The grounds for refusal to donate their kidney were as follows: religion (p=0.35) ethnicity (p=0.035), infringement of bodily integrity (59.6%). Among the students who know a kidney transplant recipient, 75% agreed to donate their kidneys after death (p=0.018).

**Discussion and conclusion:** The study indicates that the University of Abomey-Calavi (UAC) students have limited knowledge about kidney donation. Some factors influencing student choice include religion, ethnicity and bodily integrity. Development of transplant in Benin requires regular awareness-raising and motivation of the general population.

**Keywords:** Donation; Kidney Transplant; Benin

## INTRODUCTION

Kidney transplant is considered as the best treatment for stage V chronic kidney disease. It improves not only the patient quality of life, but also their survival regardless of the age group [1] Kidney transplantation technique developed significantly over the past fifty years, largely as a result of better understanding of the immune system role in allograft rejection, elucidation of the molecular mechanisms underlying graft failure and better management

of immunosuppressive drugs [2,3]. This kidney transplant development is remarkable, especially in developed countries. That is the case in France with 3,486 kidney transplants in the year 2015, an increase of 7.8% over the year 2014 [4]. Such growth is equally observed in Iran with the number of kidney transplant population increasing from 6 in the year 1984 to 1,422 in 2000 [5]. In North Africa, Tunisia and Morocco excel among countries where patients have access to kidney transplant, with about 10

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transplants performed each year per million inhabitants [6]. In sub-Saharan countries, access to kidney transplant is limited despite the progression of end stage renal disease which affects all these countries including Benin. The State will derive more benefits by supporting patients transplant than sustaining high dialysis costs indefinitely [7]. This study deserves credit for being the first research conducted on kidney donation and transplant in Benin. The objective is to analyze University of Abomey-Calavi students perception about kidney donation and transplant, evaluate their knowledge and identify factors that might foster or delay the introduction of kidney donation and transplant in Benin.

## MATERIAL AND METHODS

It was a descriptive and analytical cross-sectional study conducted from 15<sup>th</sup> May to 17<sup>th</sup> August, 2017. Four higher education institutions were selected: the Faculty of Health Sciences (FSS) and the National Health Services Institute (INMeS), as well as two entities under legal sciences namely: the Faculty of Law and Political Science (FADESP) and the National School of Administration and Magistracy (ENAM). A nonprobability and comprehensive census of the students from these educational institutions was conducted.

### Inclusion criteria were as follows:

FSS: 2<sup>nd</sup> to 7<sup>th</sup> year students in general medicine. These students are supposed to have been taught anatomy and renal physiology courses, and therefore have good knowledge of the importance of this organ;

INMeS: 3<sup>rd</sup> year undergraduate students who are supposed to have also been taught anatomy and renal physiology courses;

FADESP: Master 1 and 2 students who are supposed to have been taught Law (able to understand the informed consent expected from a kidney donor);

ENAM: 2<sup>nd</sup> and 3<sup>rd</sup> year students who are supposed to have also been taught Law;

Give consent to participate in the study.

Students who did not give their consent to participate in the survey and those absent from lectures during the study period were not included.

The data collection tool was an anonymous questionnaire designed on the basis of the different variables (Appendix I). Data collection was conducted by a 7<sup>th</sup> year medical student who met all the students from these faculties after awareness-raising and their consent.

### The variables studied were as follows:

#### Dependent variables

The dependent variable is UAC students 'perception about kidney donation and transplant, distributed according to the followings: knowledge, opinion and factors delaying kidney donation and transplant in Benin. These variables include several sub variables.

#### Knowledge of

- Life-threatening diseases requiring transplant
- A kidney transplant recipient
- Effectiveness of kidney transplant
- Transplantable organs

- Source of donor kidneys
- Kidney removal structures

#### Opinion

- Consent to donate one's kidneys
- Difficulty in donating some organs
- Perception about the implementation of kidney donation and transplant.

#### Delaying factors

- Religious considerations
- Infringement of bodily integrity

#### Independent variables

- These are variables which can influence kidney donation and transplant in Benin.

#### Sociodemographic variables

- Age: Discretized quantitative variable with modalities ranging from 17 to 28 years.
- Gender: Nominal qualitative variable with the following modalities: male and female.
- School year: Qualitative ordinal variable with the following modalities; high school +2 years university education, high school +3 years university education, high school +4 years university education, high school +5 years university education, high school +6 years university education, high school +7 years high school.
- Major: Qualitative variable with the following modalities: general medicine, nursing, FADESP, ENAM.
- University: Qualitative variable with the following modalities: FSS, INMeS; UAC.
- Ethnic group: Qualitative variable with the following modalities: Goun, Fon Nagot, Fulani, Bariba, Yoruba, Mina etc.
- Religion: Qualitative variable with the following modalities: Christian (Evangelical, Catholic, Christianity, Protestant), Jehovah Witness, Eckists (ECK), Muslim, Animist etc.
- Nationality: Qualitative nominal variable with the following modalities: Beninois.
- The paper-based data collected through the questionnaire were entered in Excel 2010 and analyzed with SPSS 21. Differences between the various groups were analyzed using Chi square test or Fisher exact test. Differences were considered significant for a p-value below 0.05.
- This study conducted as part of academic research, was carried out in strict compliance with the principles of good clinical practice (GCP). Student provided their free and informed consent in writing. Confidentiality was strictly preserved during data collection. Information generated as part of this study were anonymously processed.

## RESULTS

In total, 401 students took part in the study including 311 from the Faculty of Health Sciences, 26 from the National Health Services Institute, 23 from the Faculty of Law and Political Science (FADESP) and 41 from the National School of Administration and Magistracy (ENAM). They were all Benin nationals. The respondents' age ranged from 17 to 28 years with  $21.68 \pm 2.32$  as mean age; 20-25 years age group was the most represented, with 68.08% of the total number of respondents. Over half of the students were male (55.6%) with a sex ratio of 1.25 and over two thirds of them were Christians (85.04%). Fon and related ethnic groups were the most represented with a percentage of 51.1% followed by Goun in a proportion of 19.7%; Fulani were the minority ethnic groups (0.5%).

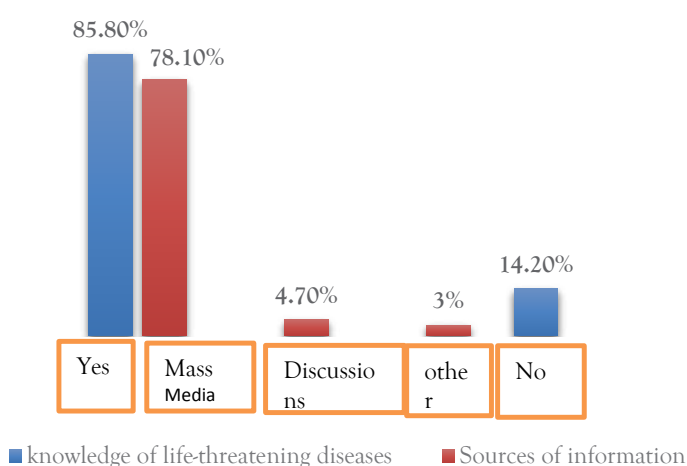
### Students' knowledge of kidney donation and transplant

Over half of the respondents heard about life-threatening diseases requiring transplant (85.8%), while 78.1% were informed through mass media (Figure 1).

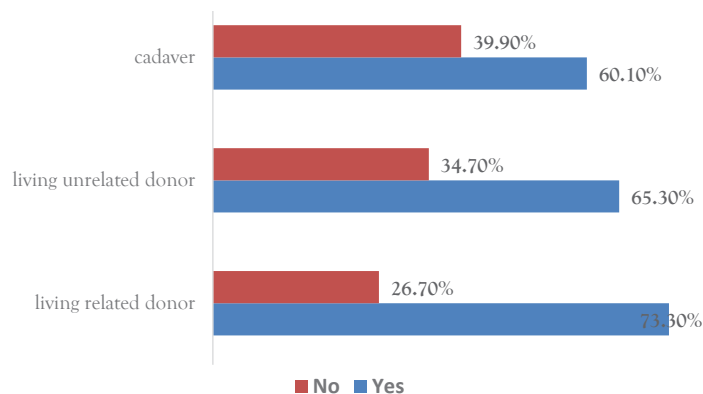
Among the respondents, 8% knew a kidney transplant recipient. For over two thirds (86.8%) of them, kidney transplant is an effective therapeutic alternative. The majority of respondents were familiar with transplantable organs (95.3%), and among that majority, 93.3% understood that kidneys were also transplantable. Over two thirds (73.32%) declared that the transplanted kidney comes from living related donors, while for 65.3% of them, the transplanted kidney comes from living unrelated donors (Figure 2). For 85.5% of the respondents, kidney removal should be done in teaching hospitals against 14.2% and 0.5% who believed it should be done in public hospitals in private clinics respectively.

### Student's opinion on kidney donation and transplantation

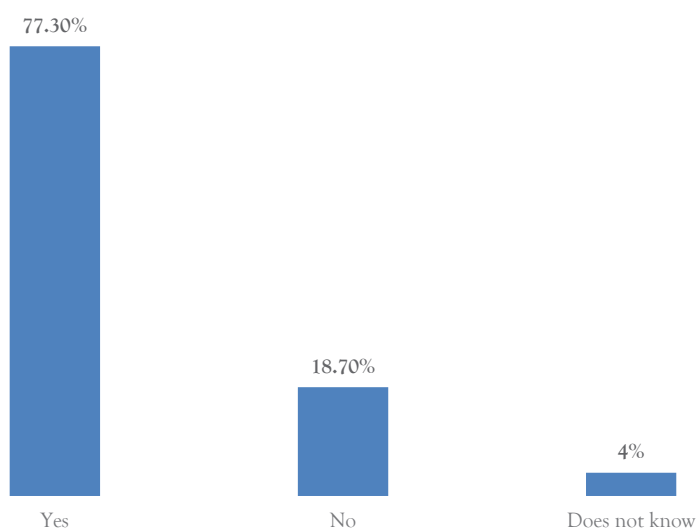
Over two thirds of the respondents (77.3%) agreed to donate their kidneys after death against 18.7% who disagreed (Figure 3). Less than a third (28.9%) believed that their religions do not allow organ donation. For over half of the respondents (59.6%), kidney donation affects the integrity of the body. Two-thirds (70.32%) of the students pointed out the need for public awareness, while 16.20% were in favor of political commitment and adoption of a specific law in view of the implementation of such activity (Figure 4).



**Figure 1:** Respondents distribution according to their knowledge of life-threatening diseases requiring transplant and their source of information.



**Figure 2:** Students distribution according to the source of the kidney transplant.



**Figure 3:** Students distribution according to their consent to donate their kidneys after death.

### Factors influencing kidney donor's consent

Upon crossing ethnic group with kidney donor's consent, the result reveals that among the respondents from Fulani ethnic group, none agreed to donate their kidneys after death. There is a statistically significant association between ethnicity and kidney donation by the students after death ( $p=0.035$ ). Also, considering religion, we noted that over half of Muslims (65.79%) and Jehovah's Witnesses (66.67%) declined donating their kidneys after death. However, there was no statistically significant association ( $p=0.353$ ). Among students from non-health faculties, 63.93% agreed to donate their kidneys after death against 51.19% for health science students ( $p=0.042$ ). Among students who know a kidney transplant recipient, 75% agreed to donate their kidneys after death ( $p=0.018$ ). The reasons for refusal were that kidney donation affects bodily integrity (59.6%) of the respondents in addition to religious and ethnic beliefs (Table 1).

## DISCUSSION

The results of this survey reflect the knowledge and opinion of Benin student community on kidney transplant and donation. The mean age of our sample was  $21.68 \pm 2.32$  years, with extreme values of 17 and 28 years. The most represented age range was 20-25 years, with a frequency estimated at 68.8%. The same age group was noted by Esqalli et al. [8] in Morocco in the year 2015. This could be justified by the fact that the target population consisted of students in both studies.

Table 1: Students distribution according to their desire or disinclination to donate a kidney after death.

	Yes	No	Does not know	p	
Ethnic group	Fon	105	95	5	0.035
	Goun	53	25	1	
	Fulani	0	2	0	
Religion	Other	52	63	0	0.353
	Christian	186	149	6	
	Muslim	13	25	0	
	Animist	7	7	0	
	Jehovah's				
	Witness	1	2	0	
Major	Eckist	3	2	0	0.042
	Medical sciences	171	163	3	
	Legal sciences	39	22	3	
Knowledge of kidney transplant recipient	Yes	24	8	0	0.018
	No	186	177	0	

Amongst the respondents, over two-thirds (85.8%) have already heard of life-threatening diseases requiring kidney transplant. Their main sources of information are mass media (78.1%). This proportion is much higher than the rate recorded by Esqalli et al. [8] in Morocco, with 66.6% of the population being informed about life-threatening diseases through the media (46.7%) as the main source of information. In a study conducted among students in an Indian rural town, Bharambe et al. [9] recorded the same findings regarding mass media source of information as follows: television (55.2%) and newspapers (45.8%). Mass media are therefore an essential tool for organ donation and transplant outreach and awareness-raising among Benin population.

Over two thirds of Beninese respondents (86.8%) believed that kidney transplant is an effective therapeutic alternative. This figure largely exceeds Esqalli et al. [8] results with a proportion of 49.7%. Though kidney transplant is not performed in Benin, some educated country citizens do know the importance of this activity.

For 65.3% of the respondents, the transplanted kidney comes from living unrelated donors. This figure is similar to the results recorded in Morocco by Esqalli et al. [8] who reported 75.5%. Such figure is consistent with the practice in Europe and the USA [10], where living donors kidney transplant accounts for 30-50% of all transplants, with better results [11]. There are therefore possibilities for living-donors kidney transplant in Benin. On the other hand, the according to the students, the refusal of a living donor to donate their kidneys could be explained by the existence of risks and complications after the removal of organs from living donors [9].

In this study, for 85.5% of respondents, kidney removal should be done in teaching hospitals (CHU) against 0.5% who declared it should rather be done in private clinics. This is in contrast to the result recorded in Morocco, where 79.5% of respondents declared that organ transplant are performed in private clinics, compared to 24.8% in teaching hospitals. This is explained by the fact that in Benin, teaching hospitals generally have better facilities and are the only referral health centers.

About 77.3% of the respondents agreed to donate their kidneys

after death. This figure is higher than the result recorded by Saleem et al. [12] in Pakistan, Hamouda et al. [6] in Tunisia and Esqalli et al. [8] with respectively 45%, 50% and 57.6%. On the other hand, this result is consistent with Niang et al. [13] findings in Senegal, with 71.5% of the population having expressed the desire for kidney donation as part of treating chronic kidney disease.

In our study, we noted that among the students who accepted donating their kidney, 94.04% know a kidney transplant recipient, with a significant difference:  $p=0.018$ . This can be explained by the fact that a living kidney transplant recipient able to function independently, is ground for kidney transplant as an effective therapeutic alternative. Based on that, the population sensitivity to donate kidney increases. However, for effective promotion of kidney transplant in Benin, the majority of the respondents (70.32%) expressed the view that focus should be mainly placed on public awareness; the same observation was made in Morocco by Esqalli et al. but in a slightly lower proportion than ours (57.6%) [8]. Any kidney transplant and donation initiative in Benin must therefore be based on strong collaboration with the media, as they play a key role in raising awareness among the population.

Among students who agreed to donate their kidney after death, the Goun and related ethnic groups accounted for 67.08%, followed by the Fon and related ethnic groups (51.22%). None of the Fulani in this study agreed to donate their kidney after death, and there is a statistically significant association between ethnicity and kidney donation with  $p=0.035$ . This may justify the possible existence of disinclination to donation in some Benin communities dominated by specific ethnic groups.

The results of our study revealed that about a quarter i.e. 28.9% ( $p=0.353$ ) of the respondents believe that their religion does not allow kidney donation. Noto-Kadou-Kaza et al. [14] made the same observation with Islamic religion, but in a higher proportion, as 45.5% of Muslims in his study were opposed to cadaveric organ donation. However, unlike the results of our series, Fangmin et al. [15] in China reported that among medical students, there exists a significant correlation between religion and the willingness for post mortem kidney donation to a stranger. In Asia, an Indian study

conducted by Ramadurg et al. [16] among students revealed the impact of religious beliefs and the difficulty in changing these blind beliefs, as only 4.3% of respondents considered that their religions would allow organ donation. Moreover, the number of organ donations decreased by only 3% after a training conducted on organ donation and transplant. However, according to our study, religion does not seem to negatively influence kidney transplant and donation ( $p=0.353$ ). Among the respondents, 60.94% of non-health science students agreed to donate their kidney compared with 51.1% of health science students with a  $p=0.042$ . The same findings were recorded in Morocco with 50% and 62.7% for health and non-health students respectively [8]. Health students are therefore not more inclined to donate their organs than non-health students. Thus, the need for awareness-raising sessions across all segments of the population to encourage the largest possible number of organ donors.

## CONCLUSION

Kidney transplant and donation are medical activities known by the student community in Benin. As part of the introduction of kidney donation and transplant, focus should be on public awareness-raising through mass media and religion. Ethnicity could negatively influence people desire to donate. Our study provides an initial outline of Benin students' knowledge and opinion on kidney donation and transplant. This could be a starting point of such activity in Benin.

## COMPETING INTERESTS

The authors declare that they have no competing interests.

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