

Knowledge and attitude towards body donation among students in Huye campus, University of Rwanda

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ABSTRACT

INTRODUCTION: Body donation is the willingness of a person to donate his body or organ to a person or organization after death. Medical schools in Western countries depend solely on human donations for medical education. However, the trend is different in Africa due to limited literature. This study aimed to measure the level of knowledge and attitude toward body donation among students at the Huye campus, University of Rwanda

METHODS: A cross-sectional study involving 120 students at the Huye campus of the University of Rwanda. Data was collected using a Google format questionnaire. Knowledge and attitude were assigned scores of 0 and 1 for wrong and correct options, respectively. Knowledge of body donation was calculated as the sum of the scores of all knowledge questions, and Attitude was assessed as the mean of the sum of attitude scores. The association of age, knowledge, and attitude was assessed in bivariate analysis with the Chi-square test. The threshold for statistical significance was $P \leq 0.05$ with 95% confidence intervals.

RESULTS: 49.2% of the respondents had a very good knowledge score, 43.3% had a good knowledge score, 6.7% had a fair knowledge score, and 0.8% had a poor knowledge score. The positive attitude score was 85.8%, and the negative attitude score was 14.2%. However, 66.7% of the respondents showed an unwillingness towards body donation, and 84.2% showed a willingness towards organ donation.

CONCLUSION: The unwillingness to donate body organs observed in this study calls for the introduction of sensitization programs or courses on body donation at the tertiary level of education in Rwanda.

Keywords: Human-body, Human-organ, Donation, Knowledge, Attitude

INTRODUCTION

Medical schools in the Western world rely on the generosity of body donations for medical

education [1]. In Africa, new medical schools are being established, thus causing the desperate need for body donation programs to train medical students. Additionally, there seemed to

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be a connection between the number of medical students that can be admitted into medical programs and the availability of resources such as body donors or cadavers for proper training. Hence, there is pressure to acquire more resources [1]. Most of the human donations used in African medical schools come from donations of the “unclaimed body of a deceased person.” The revised Anatomy Acts in some African countries have not made provisions on how the “unclaimed body of a deceased person” should be obtained for medical education [2,3]. In Nigeria, there is limited literature on the “unclaimed body of a deceased person” despite the increasing demand for body donations in medical schools [4]. In Rwanda, the anatomy law of 2023, article 17 stipulates that at the expiry period of 21 days after the announcement on national radio, an unclaimed body can be donated for medical education and scientific research [5]. Although the Anatomy Act of Rwanda stipulates the use of unclaimed bodies for medical education and scientific research, the regulation of obtaining cadavers for anatomy teaching in medical institutions is still relatively new in Rwanda and some East African countries [6].

Article 2 of the anatomy law of Rwanda defines a human donor as a) a living person who makes a voluntary donation of an organ, tissue, cell, or product of their body; b) a person who, during their lifetime and by a will, makes a voluntary donation of his or her body, of an organ, tissue, cell or products of his or her body; c) a deceased person whose body is donated by his or her family members for use of such a body, of an organ, tissue, cell or products of that same body; d) a deceased person whose body is unclaimed and used as a whole body or from which an organ, tissue, cell or products are harvested [5] (Anatomy law Official gazette no of 16/03/2023). Studies on body donations are less common in Africa compared to the Western world [7]. A study carried out in Rwanda revealed limited published data on knowledge, attitude, and perception toward organ donation [8], and there is no published data on studies done on body donation. The present study seeks to document the knowledge and attitude regarding body donations among students in the Huye campus of the University of Rwanda.

Operational definitions: Knowledge can be defined as “the body of truths or facts accumulated over time, the cumulated sum of information, its volume

and nature, in any civilization, period, or country” [9]. In this study, knowledge represents the body of information on a human donor (body or organ donation). Attitude can be defined as “a persistent mental state of readiness to react to a certain class of objects, or the mindset or a tendency to act in a particular way due to both an individual’s experience and temperament” [9,10].

METHODS

Study design: A cross-sectional study design with a quantitative approach was used to assess the knowledge and attitude towards body donation among year one students in the Huye campus of the School of Medicine and Pharmacy, University of Rwanda.

Study site and sample size: The study was conducted at the Huye campus of the University of Rwanda. The target population was year-one students in the School of Medicine and Pharmacy. This set of students was targeted because they are newly introduced to the gross anatomy module. Based on available data from the Dean of Students’ office, there are a total of 240 year-one students. The sample size was calculated using the Krejcie and Morgan [11] table, which has a predetermined sample size (s) for population size (N) ranging from 10 to 1000000. The sample size (s) for the table is calculated using the formula below;

$$S = X^2NP(1-P) * d^2 (N-1) + X^2P(1-P)$$

Where:

S= required sample size

X²= the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the Population size

P = the population proportion (assumed to be .50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

Using the Krejcie and Morgan table, the sample size for a population size (N) of 240 is 148 (s). However, only 120 students gave their consent to be recruited into the study. This constituted the sample size of the study.

Eligibility criteria: The study populations were males and females (n=120) who gave their consent, were above 18 years of age, and were year one

students offering anatomy modules at the School of Medicine and Pharmacy, University of Rwanda, Huye campus.

Students who are not in the first year at the School of Medicine and Pharmacy, or refused to consent, were below 18 years of age or were on other campuses outside Huye. These sets were excluded from the study.

Data collection tools: A Google format questionnaire was used for data collection, and the questionnaire was adopted from the study conducted by Uwingabiye et al. [9] and modified. This questionnaire had been previously validated in India by Balwani et al. [12]. The questionnaire captured information on socio-demographics, knowledge, and attitudes towards body donation among students in the Huye campus, University of Rwanda. The link to the questionnaire was shared with respondents after they had given their consent. Research assistants were recruited and trained on how to use Google format questionnaires, and they helped the investigators interpret the questions in Kinyarwanda for those who did not understand the English language that was used on the Google forms.

Data analysis: The data analysis was done using Microsoft Excel and SPSS version 21. Microsoft Excel was used to clean, edit, sort, and code data imported from SPSS software. Knowledge and attitude were assigned scores ranging from zero (0) to one (1), which helped in grading responses. There were 9 items for knowledge, and the wrong option was graded a zero (0) score, while the correct option was assigned a one (1) score. The level of knowledge on body donation was calculated as the sum of the scores of all knowledge questions, and it was presented as a percentage score such that there were four categories for knowledge. The categories were; very good, good, fair, and poor. Attitude was assigned a zero (0) score for the wrong option, while the correct option was assigned a one (1) score. Attitude was assessed as the mean of the sum of attitude scores, and the values below the mean were reported as negative attitudes, while scores above were reported as positive attitudes. The association of knowledge and attitude with sociodemographic variables was assessed in bivariate analysis with the Chi-square test. The threshold for statistical significance was $P \leq 0.05$ with 95% confidence intervals.

The ethical approval number CMHS/IRB/535/2022

was obtained from the College of Medicine and Health Sciences Institutional Research Board (CMHS-IRB) of the University of Rwanda.

RESULTS

Sociodemographic characteristics of respondents
A total of 120 respondents consented to be recruited into the study, constituting 81% of the predetermined sample size. The majority of the respondents were males (65.8%), and the majority were in the 18-24 age category (94.2%). The majority of the respondents were single (96.7%), and the majority (96.7%) of them were Christians, and few were Muslims (3.3%). This is presented in Table 1.

Level of knowledge: The wrong options were graded as a zero (0) score, while the correct options were graded as one (1) score. There were 9 items for knowledge in total, and this was converted to percentage score such that if a respondent scores 7-9 points (81-100%) that shows very good knowledge, 61-80% was graded as good knowledge, 50-60% was graded as fair knowledge, and less than 50% was graded as poor knowledge.

Table 1: Socio-demographics of the respondents

Demographics		N	%
Age Categories	18-24	113	94.2
	25-29	4	3.3
	30-34	3	2.5
	Total	120	100.0
Gender	Female	41	34.2
	Male	79	65.8
	Total	120	100.0
Marital Status	Married	4	3.3
	Single	116	96.7
	Total	120	100.0
Religion	Christian	116	96.7
	Muslim	4	3.3
	Total	120	100.0
Program of Study	Medicine	45	37.5
	Nursing	2	1.7
	Others	49	40.8
	Pharmacy	24	20.0
	Total	120	100.0

Table 2: Knowledge of respondents

Knowledge Items	Yes	(%)	No	(%)
1. Have you heard of body donation?	98	81.7	22	18.3
2. Have you heard of organ donation?	112	93.3	8	6.7
3. Can parents/guardians make decisions regarding body donation on behalf of a mentally disabled person?	69	57.5	51	42.5
4. Is it true that a dying person can donate their body voluntarily for medical education?	108	90	12	10
5. Is it true that body donation goes against religious and cultural beliefs of respect for the dead?	44	36.7	76	63.3
6. Is body donation beneficial to the society?	119	99.2	1	0.8
7. Is it true that a body donor must be of the same ethnicity (e.g. African to African)?	16	13.3	104	86.7
8. Is it true that the kidney is the most commonly donated organ?	117	97.5	3	2.5
9. Is it true that unclaimed bodies can be donated to medical schools for medical education?	93	77.5	27	22.5

Based on these categories, 49.2% of the respondents had very good knowledge, 43.3% had good knowledge, 6.7% had fair knowledge, and 0.8% had poor knowledge (Table 2 and Figure 1) The results revealed that there was no significant association between the age categories of respondents and knowledge score in the study ($P > 0.05$) (Table 3)

Attitude: Attitude was assigned a zero (0) score for the wrong option, while the correct option was

assigned a one (1) score. Attitude was assessed as the mean of the sum of attitude scores, and the values below the mean were reported as negative attitudes, while scores above were reported as positive attitudes. Questions on body donation and organ donations were asked to ascertain the attitude of the respondents. The results revealed that the majority of the respondents do not wish to donate their body after death (66.7%). A majority of the respondents are willing to donate their organs to save a life (84.2%). However, the positive

Table 3: Association between age categories of respondents and knowledge score

Age (years)	Knowledge Score				Total	Chi-Square (c^2) Analysis
	Very good	Good	Fair	Poor		
18-24	57	48	7	1	113	$c^2=3.419$
	50.4%	42.5%	6.2%	0.9%	100.0%	
25-29	1	2	1	0	4	df=6
	25.0%	50.0%	25.0%	0.0%	100.0%	
30-34	1	2	0	0	3	p value = 0.755
	33.3%	66.7%	0.0%	0.0%	100.0%	
Total	59	52	8	1	120	
	49.2%	43.3%	6.7%	0.8%	100.0%	

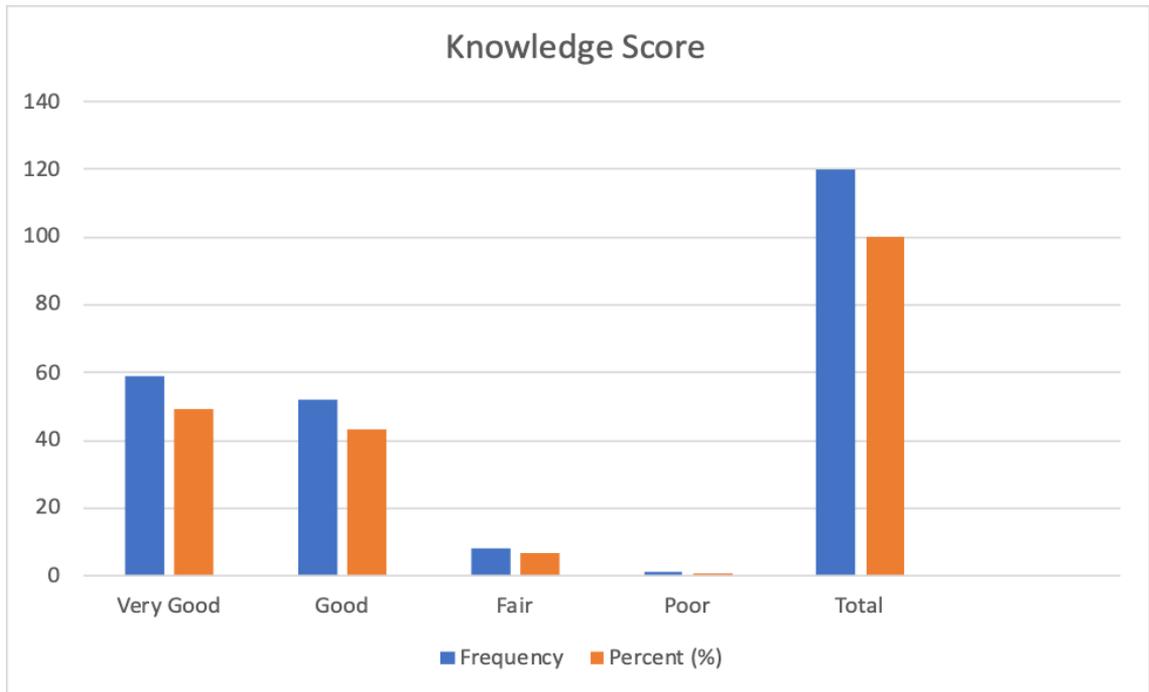


Figure 1: Knowledge Score among the respondents

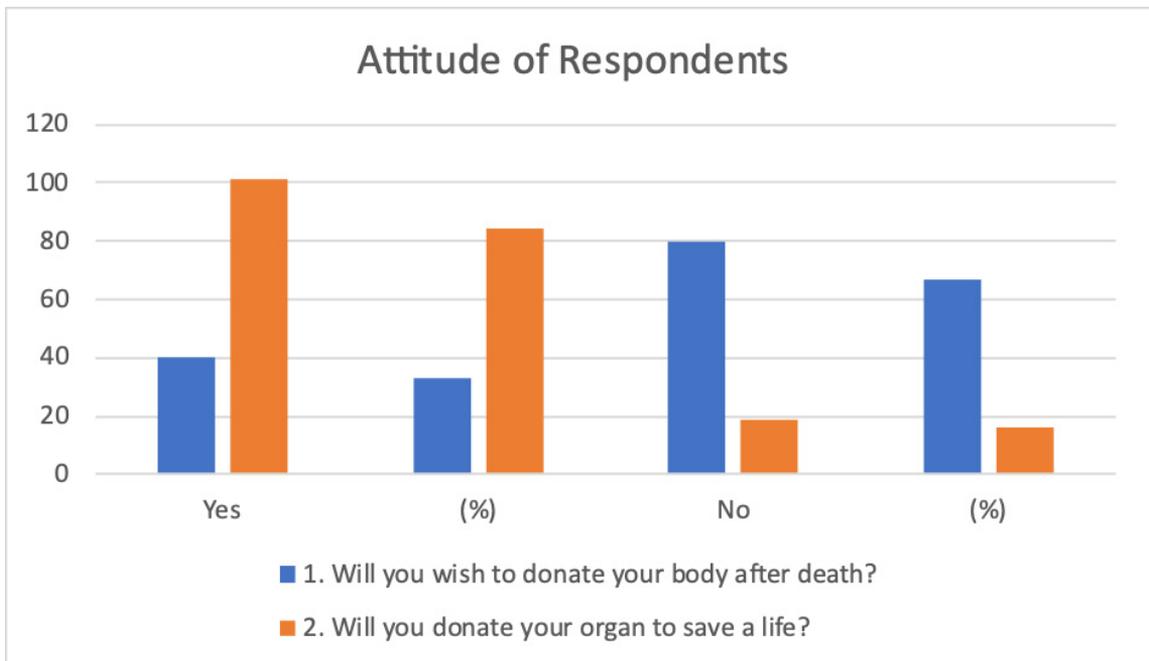


Figure 2: Attitude towards body donation and organ donation among the respondents

attitude score was 85.8%, and the negative attitude score was 14.2% (Figures 2 and 3).

The results revealed that there was no significant

association between the age categories of respondents and attitude score in the study ($P > 0.05$) (Table 4)

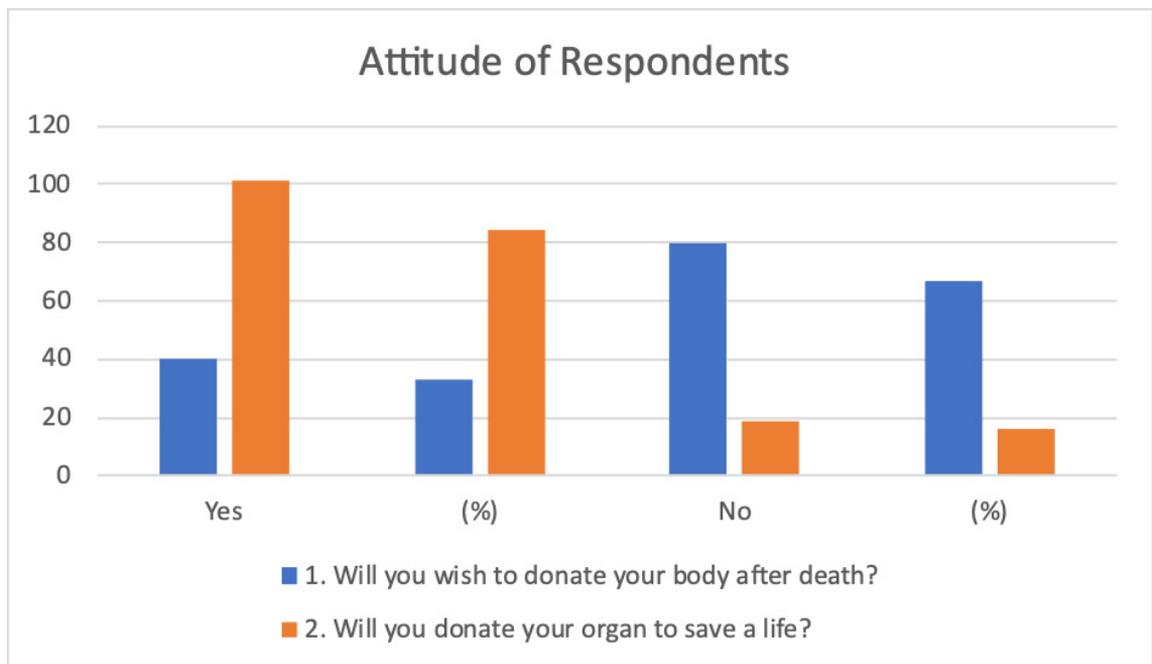


Figure 3: Positive and negative attitudes among respondents

Table 4: Association between age categories of respondents and attitude score

Age (years)	Attitude Score		Total	Chi-Square (c^2) Analysis
	Negative	Positive		
18-24	16	97	113	$c^2=1.567$ df=2
	14.2%	85.8%	100.0%	
25-29	0	4	4	p value = 0.457
	0.0%	100.0%	100.0%	
30-34	1	2	3	
	33.3%	66.7%	100.0%	
Total	17	103	120	
	14.2%	85.8%	100.0%	

DISCUSSION

This study aimed to measure the level of knowledge and attitude of students at the Huye campus of the University of Rwanda.

Our study at the Huye campus of the University of Rwanda showed that 49.2% of the respondents had very good knowledge, 43.3% had good knowledge, 6.7% had fair knowledge, and 0.8% had poor knowledge. 76% of the respondents reported that body donation does not go against religious

and cultural beliefs of respect for the dead, 99.2% reported that body donation is beneficial to society, and 77.5% reported that unclaimed bodies can be donated for medical education. Some authors have reported similar findings [13,14].

Our data is in line with some studies that have reported that university students have a better understanding of the concepts of body donations and organ donations due to the nature of programs offered at the university level [15,16,17,18]. However, other studies done elsewhere have contradicted this view. An example

is the study by Rosagemma et al. [19] in Italy. The study by Rosagemma et al. reported that a very high percentage of university students had not been introduced to the subject of organ and tissue donation during their training. Another study at the University of Central Saudi Arabia also observed that the majority of the students reported low public awareness on the subject of organ donation [16].

The majority of the respondents (66.7%) reported that they would not donate their body after death. This is not unsurprising because our sample population is young adults, with the majority in the age range of 18-24 years (94.2%) who are first-year students. Younger people are unwilling to donate their bodies because they rarely think about matters of life and death [20,21]; however, in the study, there was no statistical association between the age of respondents and their attitude toward body donation. In Africa, death is a dreaded event interpreted as the beginning of the communication between the physical and spiritual worlds [22,23]. This African belief strongly impacts how the dead body should be disposed of because it is believed that the dead must be given a 'befitting' burial, which goes hand-in-hand with several traditional and religious rites and ceremonies. Should these traditional and religious rites not be done, it is widely believed that the dead person will become a wandering spirit and torment the living pending when it is given a befitting burial [23]. This logic behind an African burial is commonly shared amongst the Igbo tribe of Nigeria, who see death as an ancestral journey to the land of the spirits [24,25]. Since the subject of body donation refers to human body donation after death, and death is a dreaded topic, especially amongst the younger African population, this may have affected the responses to the questions on attitude towards body donation.

A majority of the respondents (84.2%) reported a willingness to donate their organs to save a life. This finding supports a previous study on kidney donation among nursing students at the University of Rwanda conducted by Uwingabiye et al. [9], who reported 84% willingness of participants to donate their organs. Another study conducted at the University of California, San Francisco Health Science Campus reported a high level of willingness (83%) to donate an organ after death [26,27]. The reason why the subject of organ

donation was introduced in the questionnaire was to enable the researchers to gauge the level of open-mindedness of the respondents in making decisions about human donations. Based on the grading of attitude into positive and negative in the study, our data revealed that the positive attitude score was 85.8% and the negative attitude score was 14.2% (Figures 2 and 3).

This study was limited to the year one students at the School of Medicine and Pharmacy, University of Rwanda Huye campus. Huye campus is one of the campuses of the University of Rwanda; therefore, the findings cannot be generalized in their entirety to reflect the students of the University on other campuses. Another limitation of the study was the unwillingness of the respondents to be engaged in the subject of death and body donation.

CONCLUSION

The unwillingness for body donation observed in this study calls for sensitization programs or courses on body donation at the tertiary level of education in Rwanda. However, some authors have reported that body donation programs should target older people since they are more receptive to discussing issues bordering on death and burial [28,29,30].

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