

*Research Article***Knowledge about Organ Donation among Minia University Students, Egypt****Mahmoud A. El-Serief, Khaled H. M. El-dessouky, Eman R. Ahmed and Sara M. Sayed**

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**Abstract**

**Background:** Organ transplantation is life-saving for patients with failing organs. Knowledge is one of the most important factors influencing individual donation preferences. **Aim of the study:** To determine the level of knowledge among undergraduate students of medical and non-medical faculties regarding organ donation. **Research methodology:** This is an observational descriptive study, included 688 students, 372 (54.1%) students from faculty of medicine and 316 (45.9%) students from faculty of Tourism and Hotels during the period from December to May 2018. **Results:** About 65% of the students had adequate knowledge about organ donation. The mean knowledge score was significantly higher among medical than non-medical students. The main sources of knowledge regarding organ donation among students was internet (49%), knowledge of kidney donation was the highest (87.6%), followed by blood (66.7%). **Conclusion:** There is generally an adequate knowledge about organ donation but a lack of sufficient knowledge about the legal and ethical aspects of organ donation. **Recommendation:** Comprehensive educational programs on OD including lectures, campaigns and advertisements should be arranged on a regular basis among colleges in a religiously and culturally accepted background.

**Key words:** Organ donation – Knowledge – Students – Egypt.**Introduction**

Organ transplantation (OT) is the transfer of human cells, tissues or organs from a donor to a recipient with the aim of restoring function(s) in the body. It is the most preferred treatment modality to replace the failed organs (WHO, 2017). Organ donation (OD) is the cornerstone in the process of transplantation. It can be related to a deceased donor or a living donor (Kazemeyni and Aghighi, 2012).

The issue of OD is a multifactorial and complex one, involving legal, ethical, medical, organizational, and social factors (Ghods, 2009). Despite all advances in organ and tissue transplantation over the past decades, the gap between available organs and patients waiting for transplantation is widening (Kocaay et al., 2015).

Organ shortage is becoming a global concern (Badrolhisam and Zakaria, 2012).

It leads to a steady increase in healthcare problems and increase in the number of untreated people having organ failure and also it has led to the development of the international organ trade, where potential recipients travel abroad to obtain organs through commercial transactions (Bagheri, 2005; Emiroglu et al., 2006).

In Egypt, there is lack of cadaveric donation that makes the living donation is the only hope for patients with organ failure which making exploitation of the poor people, commercialism and transplant tourism and healthcare inequity (Budiani-Saberi and Delmonico, 2008).

**Rationale of the study:**

In Egypt, there is a high prevalence of chronic renal failure and liver cell failure. However, OT is the best treatment for organ failure, many patients die on organ transplant waiting list due to lack of donors especially in Egypt.

Medical students are the future doctors, their knowledge can either facilitate or hinder the process of OD. They will play an important role for improving the awareness of the need for organ transplantation in local communities. Also university students, will being the future intellectual elites, will contribute to propagate OD as a method of treatment among population.

### **Research methodology**

#### **Study design:**

This is an observational descriptive study was conducted among undergraduate students in Minia University, Egypt.

#### **Study population and sampling technique:**

Using the stratified random sampling technique, the faculties of the university were divided into medical and non-medical faculties. Faculty of Medicine and Faculty of Tourism and Hotels were randomly chosen for the medical and non-medical faculties respectively.

A total 688 undergraduate students were included in the study from the fourth grade in both faculties. 372 students from the Faculty of Medicine with response rate 93.7%, 316 students from Faculty Tourism and Hotels participated with response rate 82.3%.

#### **Ethical consideration:**

Data were collected from participants after explaining the nature of the study and taking a verbal consent from each of them. The study protocol was approved by the research ethical committee of Minia University, and an approval of the faculties' deans was obtained.

#### **Data collection:**

Data were collected by a self-administered questionnaire, which was designed from

previous validated questionnaires in similar studies (Hanafy and El Sebaee, 2014; Balwani et al., 2015; Bharambe et al., 2016), was prepared in English and translated into Arabic and was modified to suit and to assess the situation in Egypt.

The internal consistency was assessed and showed 84% reliability rate by using Cronbach's Alpha test. The questionnaire was pilot-tested on a random sample of 20 students to test its applicability. All participants who filled in the questionnaire for the pilot testing were excluded from the study.

The questionnaire included:

- Students' demographic characteristics (age, sex, religion, residence and faculty).
- General knowledge about organ donation: source of knowledge, possible donors, organs that can be donated, matching tests, contraindications for donation and risks to donor, concept of brain-stem death and laws that govern process of organ donation.

#### **Knowledge score:**

Knowledge was assessed via 10 questions. Each question was rated zero for wrong answer and one for right answer, then it was calculated by summing the scores for all statements; thus, the overall score ranged between 0-10 points. The level of knowledge was classified as having "adequate knowledge" (>60% or >6 points) and "inadequate knowledge" (≤ 60% or 0-6 points) modified from (Hamed et al., 2016).

#### **Data management:**

After filling the questionnaires, the data were gathered and entered into the Statistical Package of Social Science (SPSS), version 20.

**Results:****Table (1): Baseline characteristics of the studied college students, Minia University, 2018**

Socio-demographic characteristics	N (%)
Age (mean $\pm$ SD)	21.22 $\pm$ 0.59
<b>Sex</b>	
Male	317 (46.1%)
Female	371 (53.9%)
<b>Residence</b>	
Urban	350 (50.9%)
Rural	338 (49.1%)
<b>Religion</b>	
Muslim	574 (79.5%)
Christian	141 (20.5%)
<b>Faculty</b>	
Medicine	372 (54.1%)
Tourism and Hotels	316 (45.9%)
<b>Total</b>	688 (100%)

As shown in table (1), the study includes 688 students, whose age ranges between 20-23 years with a mean of  $21.2 \pm 0.59$  years. Almost 54% of the students are females and 50.9% of students reside urban areas. About 80% are Muslims.

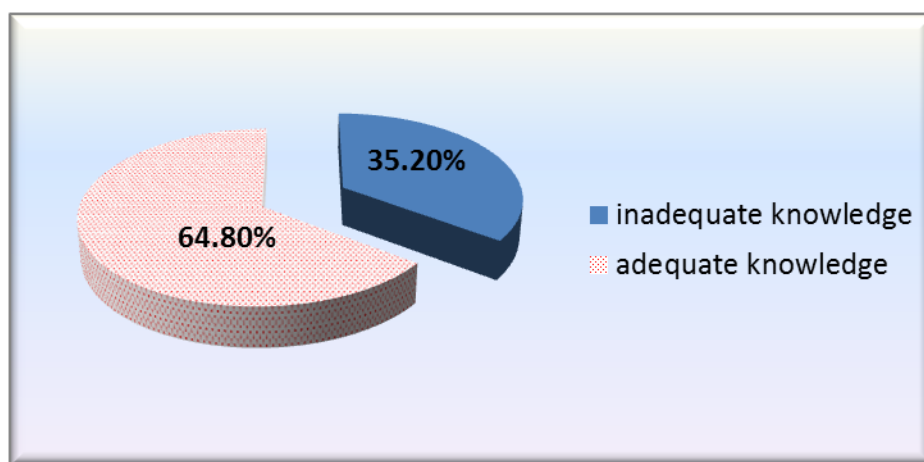
**Figure (1): Grades of knowledge about organ donation among college students, Minia University, 2018.**

Figure (1) shows that the majority of students (64.8%) have adequate knowledge and (35.2%) of them have inadequate knowledge about organ donation.

**Table (2): Knowledge assessment of organ donation among college students, Minia University, 2018**

Questions	Correct	Incorrect	Don't know
	N (%)	N (%)	N (%)
1. Do you know that the donation may be by living people as well as cadavers?	551 (80.1%)	107 (15.5%)	030 (04.4%)
2. Do you know the limit age of donor?	648 (94.2%)	023 (3.3%)	017 (02.5%)
3. Do you know the meaning of brain death?	555 (80.7%)	043 (6.2%)	090 (13.1%)
4. Can a person who has brain death but maintained on a life-support system be considered as potential organ donor?	172 (25.0%)	043 (06.2%)	473 (68.8%)
5. Can a person with a cardiovascular condition or diabetes donate?	207 (30.1%)	197(28.6%)	284 (41.3%)
6. Are Hepatitis B and C carriers being contraindicated for becoming organ donors?	459 (66.7%)	124(18.0%)	105 (15.3%)
7. Is a malignancy being contraindicated to organ donation?	474 (68.9%)	98 (14.2%)	116 (16.9%)
8. Are there laws govern the process of organ donation?	402 (58.4%)	156 (22.7%)	130 (18.9%)
9. Does organ donation process involve any possible risks?	551 (80.1%)	052 (07.6%)	085 (12.3%)
10. Do you know that both donor and recipient should pass immunological matching tests before donation?	542 (78.8%)	059 (08.6%)	087 (12.6%)

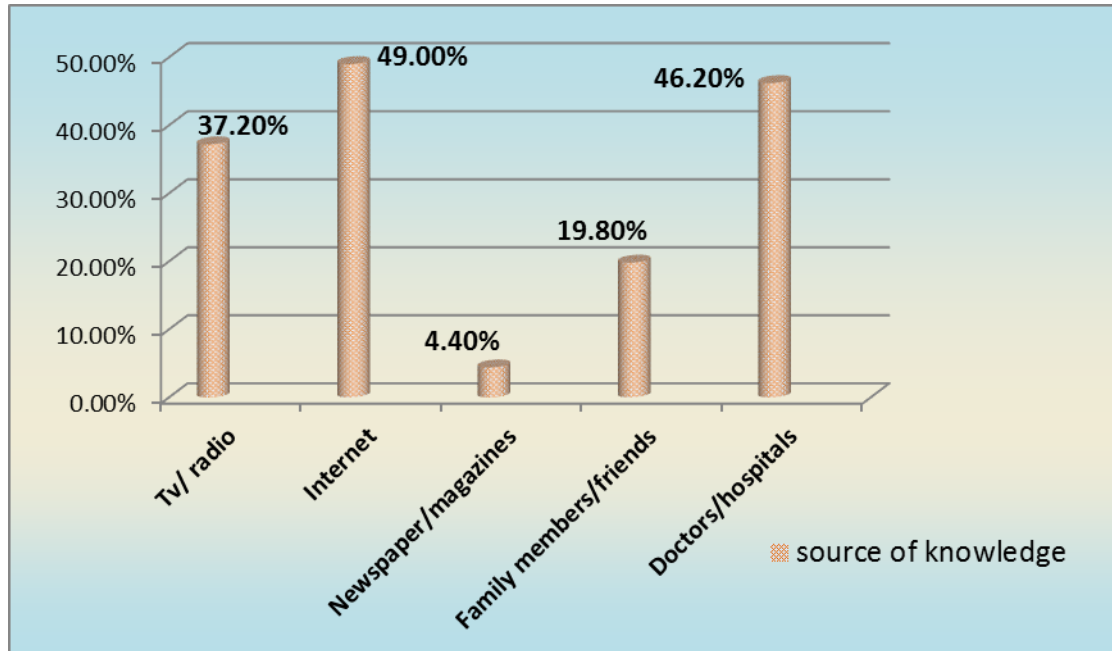
Table (2) shows that most of the students, about 80% of students aware of donation by living people as well as cadavers, know that OD process involves possible risks and both donor and recipient should pass immunological matching tests before donation. Additionally, 80.7% of students know the term of brain death (BD) however, 68.8% of the them do not know that person who have brain death but maintained on a life-support system be considered as potential organ donor or not.

As regard knowledge about contraindications for OD, 66.7% and 68.9% of the students give correct answers about eligibility of persons with Hepatitis B / Hepatitis C or malignancy to become an organ donor, respectively. On the other hand, 41.3% of them don't know about donation while having cardiovascular condition or diabetes.

**Table (3): Comparison of mean knowledge score of organ donation by sex, residence and faculty among the studied group, Minia University, 2018**

	knowledge score Mean±SD	P value
<b>Sex</b>		
Male	6.86 ± 1.96	t (df)=0.7(686) 0.9
Female	6.85 ± 1.93	
<b>Residence</b>		
Urban	7.08 ± 1.81	t (df)=3.1(686) 0.002*
Rural	6.62± 2.05	
<b>Faculty</b>		
Medicine	7.70 ± 1.49	t (df)=14.1(686) <0.0001*
Tourism and hotels	5.85 ± 1.94	

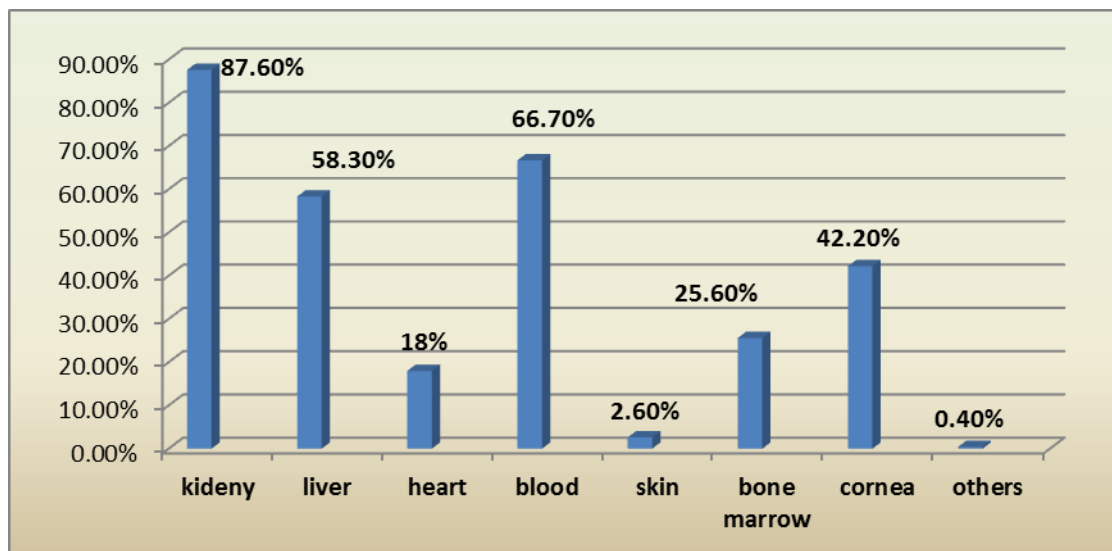
Regarding the mean knowledge score, the table above shows that urban residents and medical students have higher significant mean knowledge scores ( $7.08 \pm 1.81$ ) and ( $7.70 \pm 1.49$ ) respectively than rural residents and students of tourism and hotel's faculty ( $6.62 \pm 2.05$ ) and ( $5.85 \pm 1.94$ ) respectively. But there is no significant difference between males and female



N.B. Numbers do not add to 100% as respondents might have more than 1 answer

**Figure (2): Sources of knowledge about organ donation among the studied students, Minia University, 2018**

As shown in this figure sources of knowledge regarding organ donation, from internet being the highest (49%), followed by medical staff (46.2%), then TV/radio (37.2%).



N.B. Numbers do not add to 100% as respondents might have more than 1 answer

**Figure (3): knowledge about organs that can be donated among the studied students, Minia University, 2018.**

Figure (3) shows that knowledge of kidney donation is the highest (87.6%), followed by blood (66.7%), liver (58.3%) and cornea (42.2%).

## Discussion

In the present study, about two-thirds (64.8%) of students had an adequate knowledge of OD (Figure 1). These findings approximate in survey on Pakistan, (60%) of participants achieved an adequate knowledge score for OD while (40%) had inadequate knowledge (Saleem et al., 2009).

The current study showed that (80.1%) of students knew that donated organ could be taken from both living person as well as from cadavers (Table 2).

This was higher than findings from a study in western India carried out on 200 participants in which, 56% of the participants knew that organs could be donated from both living person as well as from cadavers (Balwani et al., 2015).

As regard the knowledge about the concept of BD, the majority of students (80.7%) in this study had a good knowledge about the term of BD (Table 2). This finding is in agreement with a cross sectional study conducted at Karnataka, India and found that majority of students knew the concept of BD (Agarwal, 2015).

In the current study, (68.8%) of students didn't know of brain dead persons but maintained on a life-support system considered as a potential donor or not (Table 2). In contrast to the previous result, (76.3%) of students in an indian study answered that brain dead persons could be potential donors for OD (Agarwal, 2015). This could explained by different traditional cultural beliefs.

As regard the knowledge about contraindications for OD, this study revealed that (66.7%) and (68.9%) of students knew that persons carrying Hepatitis C or B and malignancy were contraindications for OD, respectively. (30.1%) of them knew cardiovascular disease or diabetes mellitus are not contraindications for donors of OD. (Table 2).

This was corresponding to the results of the study found that (26.5%) of them knew cardiovascular disease or diabetes mellitus

are not contraindications for OD (Marqués et al., 2013). Bharambe et al., (2016) found that (90.2%) and (59.8%) of indian students knew that Hepatitis B or Hepatitis C positive and active cancer donors, respectively were contraindicated for donation.

It was observed from the current study that medical students were more knowledgeable than students of faculty of Tourism and Hotels with mean knowledge score ( $7.70 \pm 1.49$ ) of medical students and ( $5.85 \pm 1.94$ ) of the others (Table3) which can be attributed to the different basic information and background they had in their study courses.

This is in line with several studies of different countries in Nigeria, Pakistan and India (Odusanya and Ladipo, 2006; Saleem et al., 2009; Dilip and Lingaji , 2016) respectively, which found that the medical students were having more knowledge regarding OD than other students.

In the present study, there was no statistical significant difference between male and female students as regard total knowledge score ( $6.86 \pm 1.96$ ) and ( $6.85 \pm 1.93$ ) (Table3). This was nearly similar to results from a cross-sectional survey conducted among 230 medical students in Puerto Rico in which no significant differences were observed when stratifying by gender (Marqués et al., 2013).

Regarding the main source of knowledge about OD among the studied students in this study was internet being the highest (49%), followed by medical staff (46.2%) then TV/radio (37.2%) (Figure 2) which more or less in agreement with a study carried out among students in South India and was found that the main source of knowledge was print form of media being the highest (66%), followed by medical staff (64%) and internet (53%) (Alex et al., 2017).

As regard the knowledge of organs that can be donated among the studied students in the current study, kidney donation was the highest (87.60%) followed by blood

(66.70%), liver (58.30%) and cornea (42.20%) (Figure 3).

This was nearly similar to a study conducted among Indian students found that the knowledge of kidney donation was the highest (94%) followed by liver (78%) and cornea (59%) (Alex et al., 2017). In a study conducted in Karachi- Pakistan to detect the knowledge and ethical perception regarding OD among medical students, it was found that kidney was the most commonly donated organ, followed by blood, cornea and heart (Ali et al., 2013).

### Conclusion

About 65% of the students had an adequate knowledge about OD. By comparing students of medical than non-medical faculties, the mean knowledge scores was significantly higher among medical than non-medical students.

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