

Students' Knowledge and Attitude toward Organ Donation and Transplantation at Selected Faculties of Minia University

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Abstract

The giving of biological tissue or an organ from a living or deceased individual to a living recipient in need of transplantation is known as organ donation. The decision to donate organs and tissues is influenced by one's understanding of the process. **The aim** To assess Students' Knowledge and Attitude Toward Organ Donation and Transplantation at Minia University. **Research Design:** Descriptive research design was used. **Setting:** The study was conducted at four faculties, which were divided into two medical faculties (Pharmacy and Nursing) and two non-medical faculties (Foreign Language and Tourism and Hotel Faculties) at Minia University. **Tools:** Three tools were included: **I:** Socio- demographic Questionnaire; **II:** Organ-Tissue Donation and Transplantation Knowledge Scale and **III:** Organ Donation Attitude Scale. **Results:** More than one quarter (28%) of the studied students have good knowledge, while 40% of the studied students had fair knowledge. Additionally, 32% of the studied students had poor knowledge in all its items. More than half (66%) of the studied students had positive attitude and 34% of them had negative attitude toward organ donation and transplantation. There were statistically significant differences P value < 0.05 between socio-demographic characteristics and knowledge level regarding age, faculty, university year and the information source. Also, there were significant differences between socio-demographic characteristics and attitude level regarding age, faculty, university year, residence, and source of information. **Conclusion:** More than two thirds of students had good and fair knowledge revealing positive correlation between level of knowledge and attitude at Minia University students toward organ donation and transplantation. **Recommendations:** Scientific seminars should be provided for students to raise their awareness about organ transplantation and donation and provide posters, booklets, and leaflets in the university library.

Keywords: Attitude, Knowledge, Organ donation, Students, Transplantation.

Introduction

Organ donation at present is an extremely important issue in public health. Organ donation is a complicated and multi-factorial problem that involves medical, legal, ethical, organizational, and social factors (Darlington et al., 2019), it is described as an act of providing one or more organs to another individual, without compensation (Al Darwish et al., 2021). Vital organs such as the heart, pancreas, liver, kidneys, and lungs may be transplanted to those whose organs fail, it enables many recipients to return to a normal way of life (Giri et al., 2017).

Organ transplantation improves patient survival and quality of life and has a major beneficial effect on general health status and the socio-economic burden of organ failure (Vanholder et al., 2021). Organ transplantation is the best and often the only solution for end-stage organ failure. The most recent data from the World Health Organization (WHO) Global Observatory on Donation and Transplantation indicate that over 130 000 solid organ transplants are performed worldwide. Although impressive, it is estimated that this number represents less than 10% of the global need (GODT, 2017).

According to the WHO, organ donation and transplantation have become a crucial measure to improve both quality and duration of life (Aveiro-Robalo et al., 2021), in countries considered to be advanced in transplantation, organ transplant activity is not at the desired level, it has been shown in various studies that education, occupation, socioeconomic level, culture, religion, ethnicity, and the

development of the country are important indicators in cultivating positive approaches to organ donation (Kocaay et al., 2015& Abbasi et al., 2018).

The increasing incidence of biological organ failure and the inadequate supply of organs, especially from cadavers, have created a wide gap between organ supply and organ demand, which has resulted in very long waiting times to receive an organ as well as an increasing number of deaths while waiting. These events have raised many ethical, moral and societal domains regarding supply, the methods of organ allocation, and the use of living donors including minors. It has also led to the practice of organ sale by entrepreneurs for financial gains in some parts of the world through exploitation of the poor, for the benefit of the wealthy (Winer et al., 2020).

In general, studies have identified the elements that influence family members' organ donation decisions. First, the decision-making process is emotionally charged, with the shock of a loved one's death obstructing permission. As a result, the actions of medical personnel in general, and in particular those who seek permission from the family to collect his or her organs, becomes critical. The family's level of satisfaction with the deceased's medical care and the behaviour of the transplant team representative (in terms of sensitivity to their drama) may influence their decision. Furthermore, medical staff knowledge and attitudes about organ transplantation influence the outcome of the family members' decision-making process, as well as the information provided to the next of relatives before asking for their

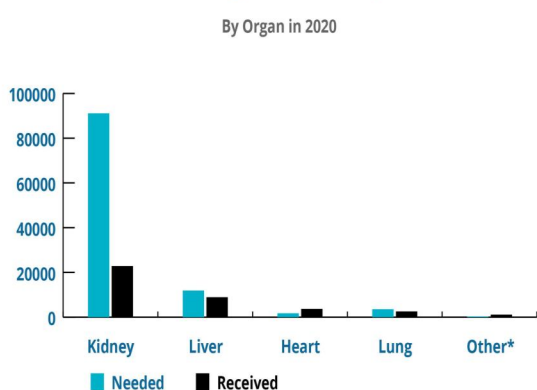
consent, particularly regarding the state of brain death, which they are aware of (**Namazee et al., 2020**).

It is very important for health workers to be more knowledgeable and more sensitive about organ transplantation and donation than other community and occupational groups. Also, enhancing public awareness will help in the provision of ethical, legal and professional governance framework to this sector which will increase organ donation and transplants. The creating of awareness may be difficult if the knowledge of health workers and students in this country are inadequate or inaccurate (**Lartey et al., 2021**).

The society role needs to be informed to increase organ donation and transplantation. In this context, the role of community nurses are very important in identifying potential donors, communicating with organ donor coordinators, obtaining consent from the families of the potential donors, and approaching the issue as role models (**Banstola & Sharma, 2021**).

Also, community nurses have an important role in raising the level of awareness among the community and they play a very important role in the education of the community with the relevant information and correct the misconceptions

Patients on the Waiting List vs. Transplants Performed



*Other includes allograft transplants like face, hands, and abdominal wall.

Figure (1): The statistics of organ transplantation(**Doby et al., 2021**)

At international level, the study done by **Alex et al., (2017)** in south India found that level of knowledge of medical students on organ donation and transplantation was inadequate, their attitude was poor and there was a positive correlation between mean knowledge, and attitude of students regarding organ donation and transplantation,

Also at a national study conducted **Hamed et al., (2016)** to assess knowledge and attitudes about organ donation among medical students at Egypt reported that 37% of the students had positive attitude. Also, 36.0% of medical student had adequate knowledge, from the previous results conclusions, revealing minority haven't adequate knowledge and attitude of students regarding organ donation and transplantation this necessity performing another studies on the same variables.

Aim of the study

- The aim of the current study was to assess Students' Knowledge and Attitude toward Organ Donation and Transplantation at Selected Faculties of Minia University.

regarding organ donation and transplantation (**Knihs et al., 2021**).

Significance of the study

Many studies have evaluated knowledge and attitude towards Organ donation from various countries but there are few reports from the Middle East area and especially Egypt (**Radunz et al., 2012 and Coad et al., 2013**). Egypt is an Arab country with a Muslim majority in its population in Egypt, organization for deceased Organ donation is still awaited and that makes living donor organ transplantation the only hope for patients with failing organs. Living donor organ transplantation was legalized by a full stand-alone law since the 1970s. Renal transplantation has been performed in Egypt since 1978 and living donor liver transplantation has been performed in Mansoura Gastrointestinal Surgical center since 2004 (**Hamed et al., 2016**). Organ transplantation gives thousands of children and adults each year a renewed chance at living full and active lives. However, the need for organs and tissue outweighs their availability. The statistics done by **Doby et al., (2021)** about organ transplantation and concluded the result in the figure (1), liver transplantation In Egypt by (**Amer& Marwan, 2016**) in the figure (2).

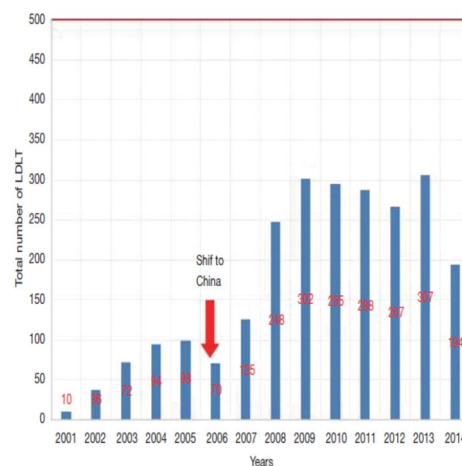


Figure (2): liver transplantation In Egypt (**Amer& Marwan, 2016**).

Research questions

1. What are the levels of knowledge and attitude of students' toward organ donation and transplantation at Minia University?
2. Are there a relation between level of knowledge and attitude of Minia university students toward organ donation and transplantation?

Subjects and Methods:

Research Design:

Descriptive research was used to achieve the aim of the present study using qualitative and quantitative data collection methods. Quantitative data collection was the most used type in the tool to illicit the needed characteristics of participant students, it was represented in the form of questions related to frequency distribution of knowledge level & attitude responses. Qualitative data collection method was the least used type in the tool, using chi square test for analyzing categorical data.

Settings:

The study was conducted at four faculties, divided into two medical faculties as following Pharmacy as well as Nursing Faculties and two theoretical faculties as following Foreign Language as well as Tourism and Hotel Faculties at Minia University. These faculties were selected by using stratified random sample technique from all faculties in Minia University.

Sample:

Stratified random sample, it is the best type of probability sample, especially for great variability among population members, it was applied by dividing the university faculties into two strata (medical & non-medical) for obtaining homogenous and sharply defined stratum, then using simple randomization technique, the faculties of pharmacy and nursing faculties for representing medical sector. Also, the investigator randomly chooses foreign language & tourism and hotel faculties for representing the non- medical faculties. The investigator chose 4th year students because they had more years in learning so they more knowledge about this study. Their total number was 235 students on 2019.

Sample calculation:

The sample size was calculated by using the **Lawley, (2020)** formula which was computed as $N = P \times \frac{20}{100}$

Where N= sample size and P= population as follows:

Faculties	Total no. of students	Subject no.	Percentage
Foreign language	250	50	21.3
Tourism & Hotel	209	42	17.9
Pharmacy	355	71	30.2
Nursing	362	72	30.6
Total	1176	235	100

Inclusion criteria

- Students in the 4th year
- Both genders of male and female students.

Tools of data collection:

Three interviewing questionnaires were used as following:

I- Personal Questionnaire:

Data were collected about the participant, it contained (6) items including gender, age, residences, marital status, educational level, and source of information.

II: Organ-Tissue Donation and Transplantation Knowledge Scale (ODTKS)

This scale adopted by the investigator based on **Emiral et al., (2017)** and translated into Arabic language by the investigator to assess organ- tissue donation and transplantation knowledge, it was consisted of 17 items with 2 dimensions as following:

- Donor characteristics which included 5 questions
- Knowledge concerning general, medical process and ethics related to organ donation and transplantation, it consisted of 3 sub-dimensions as follow: General concepts (7items); Medical process (3items); and Ethical sub-dimension (2 items), responses for each item in the form of the correct answer was scored as

(1) grade and the incorrect answer or don't know was scored as a zero.

Scoring system

The total scores of the questionnaire were 17 grades. The scoring system was classified into 3 categories as following:

- **Good** knowledge if score $\geq 75\%$ (≥ 12.75 scores)
- **Fair** knowledge if score from 50 - $< 75\%$ (8.5 – < 12.75 scores)
- **Poor** knowledge if score $< 50\%$ (< 8.5 scores).

III: Organ Donation Attitude Scale (ODAS).

The scale was adapted from **Sayin (2015)**, assess attitude regarding humanity, moral conviction and fear of medical neglect and bodily mutilation. The scale modified by the investigator, adding the following after extensive revising the related literature as a guiding principle for organ donation and transplantation:

- 1- Organ donation is a good and should be promoted.
- 2- Registering as organ donor could save somebody's life.
- 3- More information was available about the religion with regard to organ donation.

The investigator omitted the unnecessary following items: A person willing to donate is almost a hero; deciding to donate one's organs at death adds extra meaning to life; and Organ donation is a way of being grateful for God.

The scale was translated into Arabic language by the investigator; it was used to assess students' Organ Donation Attitude. It was consisted of 40 items with 3 sub-dimensions as following: Humanity and moral conviction (20 items); Fears of medical neglect (10 items); and Fears of bodily mutilation (10 items). The responses for each item were closed with three responses including "agree"= 3, "neutral"= 2, "disagree"= 1. The responses were reversed for negative statements.

Scoring system

The total score of attitudes rating scale was 120 grades; the scores of the items were summed up and were converted into a percentage score. The scoring system was classified into 2 categories as following:

- **Positive** attitude if score $\geq 70\%$ (≥ 84 scores).
- **Negative** attitude if score $< 70\%$ (< 84 scores).

Methods:

1-Implementation strategy:

A- Preparation for the study:

A study of past and present local and worldwide related literature, as well as ethical and legal norms addressing organ donation and transplantation on a national and local level. This study was carried out in order to gather all of the essential information on the proper knowledge base as well as a favorable attitude toward organ donation and transplantation .

The Deans of the selected faculties connected with Minia University gave their permission. A letter from Minia University's Faculty of Nursing was sent to them, outlining the study's purpose and requesting their consent and cooperation. Data was collected over a four-month period, commencing in October 2019 and ending in January 2020.

Field work:

After introducing himself, the investigator visited with the students in the previously specified locations and explained the goal of the study. The investigator meet the students in the class room during the break of lectures according to their academic schedule, so the investigator came to the study site twice a week (10a.m-2p.m) for exploiting free time of the students. Students completed surveys that took 25-35 minutes to complete.

B- Pilot study

A pilot study was conducted on 10% of the sample (24 students) to ensure internal consistency, validity, and reliability of the tools, estimate the time required to complete the questionnaires, and identify potential data collection issues. After removing the research tool's repeated questions, the pilot study was included in the sample.

C- Validity and reliability:

Five panels specialists examined the tools three from community staff nursing specialists, one from medical surgical nursing staff and one from pediatric surgery examined the tools to ensure that they were content valid. They determined the tools' applicability and precision in measuring what was supposed to be measured. The tools were changed based on the panel's assessment of the clarity of the sentences, the appropriateness of the contents, the order of the items, and the accuracy of the scoring and recording of items. Validity findings suggested that the current questionnaires may be employed as a useful data gathering method. Cronbach's Alpha test is used to determine the tool's internal consistency as following: Reliability of organ-tissue donation and transplantation knowledge scale performed to confirm its consistency by test-retest was ($\alpha= 0.841$). Also, the test-retest for organ donation attitude scale was ($\alpha= 0.833$) and the test-retest for the tool totally was ($\alpha= 0.820$).

D- Data collection procedures:

Official letters to obtain the approval was introduced to Faculty Dean; and Research Ethics Committee; this letter was included a brief explanation of the objectives of the study . Scales were translated into Arabic; then collect the jury

approval for the scales were obtained to collect data of the study .The scales were distributed to all the participants after explaining the purpose and process of data collection

E- Administrative design (Human rights protection):

Administrative approval: Before beginning the actual data collection, a written initial approval from the Research Ethics Committee of the faculty of Nursing and Minia University was obtained in order to obtain administrative approval for the study. The study's goals and significance were explained.

Ethical Considerations

The research approval was obtained from the Faculty Ethical Committee before starting the study.

The following are some ethical research considerations:

1. Students gave oral agreement before being included in the study, and a clear and basic explanation was given based on their level of understanding. They ensured that all information acquired was kept private and used for study purposes.
2. The investigator before beginning the study explained the objectives and goals to the participants.
3. The investigator ensured that the data collected from the subjects was kept anonymous and confidential.
4. The students were informed that they had the option of participating in the study or not, and that they had the right to withdraw at any moment.

2- Data management and statistical analysis:

The SPSS programme (statistical package for social sciences version) was used to categorise, tabulate, analyse, and enter the data collected from the study instrument (IBM SPSS 22.0). Descriptive statistics were used in this study (e.g. mean, standard deviation, frequency, and percentage). For quantitative data correlation, the Chi test was employed to determine the degree and direction of the relationship between knowledge and attitude. The significance of the findings: With a p-value of less than 0.01 it is very significant. Statistically significant when the p-value is less than 0.05. At a p-value of less than 0.05, the result is non-significant.

Results

Table (1): Distribution of the Studied Students according to their Socio-demographic Characteristics (n=235).

Items	N	%
Age (year)		
18<20	135	57.4
20 - 22	100	42.6
Mean ± SD	19.9 ± 3.7	
Faculty		
Foreign language	50	21.2
Tourism & hotel	42	17.9
Pharmacy	71	30.2
Nursing	72	30.6
Gender		
Male	105	44.7
Female	130	55.3
Residence		
Urban	110	46.8
Rural	125	53.2
Marital status		
Single	210	89.4
Married	25	10.6
Family members performed transplant		
Yes	10	4.3
No	225	95.7
Source of information		

Items	N	%
Social media	130	55.3
Magazines	20	8.5
Physicians and nurses	32	13.6
Relatives	53	22.6

Table (1): shows that, the mean age of the studied students was 19.85±3.71 years. Moreover, 57.4% of them were at the age from 18<20 and 55.3% of them was female. Additionally, 53.2% live in rural area and 89.4% were single. 95.7% of the studied students having no family members performed transplant. Also, 55.3% of the studied student’s source of information was from social media.

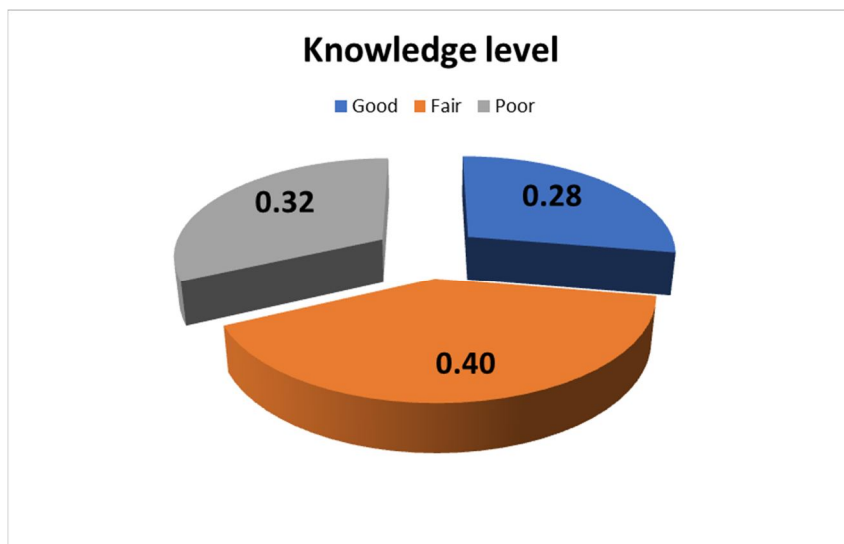


Figure (1): Distribution of the studied students’ total Knowledge level, regarding organ donation and transplantation (N=235).

Figure (1), shows that, 28% of the studied students’ have good knowledge, while 40% of the studied students’ had fair knowledge. Additionally, 32% of the studied students’ had poor knowledge in all knowledge items.

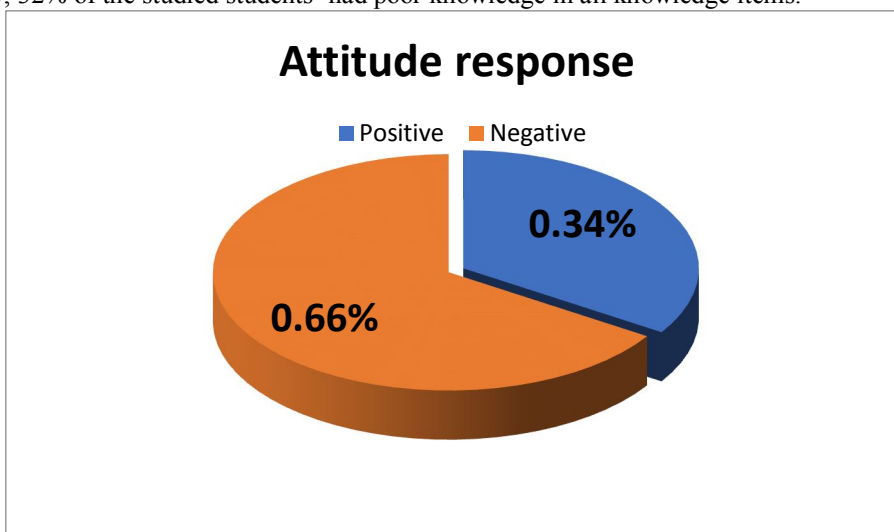


Figure (2): Distribution of Studied Students regarding attitude responses (n=235).

Figure (2), shows that, 66% of the studied students had positive attitude and 34% of studied students had negative attitude.

Table (2): Relation between socio-demographic characteristics of the studied students and their attitude (n=235).

		Attitude				X ²	P-Value
		Positive (n = 80)		Negative (n = 155)			
		N	%	N	%		
Age (year)	18-<20	20	25	115	74.2	5.302	0.009**
	20-22	60	75	40	25.8		
Marital state	Single	70	87.5	140	90.3	1.064	0.067
	Married	10	12.5	15	9.7		
Faculty	Foreign language	7	8.8	43	27.8	4.968	0.011*
	Tourism & hotel	8	10	34	21.9		
	Pharmacy	30	37.5	41	26.5		
	Nursing	35	43.7	37	23.8		
Gender	Male	35	43.8	70	45.2	1.288	0.054

		Attitude				X ²	P-Value
		Positive (n = 80)		Negative (n = 155)			
		N	%	N	%		
Residence	Female	45	56.2	85	54.8	3.699	0.031*
	Urban	38	47.5	72	46.5		
Source of information	Rural	42	52.5	83	53.5	2.796	0.040*
	Social media	24	30	106	68.4		
Magazines	18	22.5	2	1.3			
Physicians and nurses	25	31.3	7	4.5			
	Relatives	13	16.2	40	25.8		

Significant at $p < 0.05$. **highly significant at $p < 0.01$.

Table 2 shows statistically significant differences between socio demographic characteristics & the type of attitude regarding age as 75.0 % aged 20 – 22 have positive attitude. Also, 43.7% & 48.8% of faculty of nursing & foreign language respectively have positive attitude: $P=0.011$. 68.4% of the studied student, who have negative attitude, obtain their information from social media. 56.2% of female have positive attitude with no significant difference.

Table (3): Relation between Socio-demographic Characteristics of the Studied Students and their knowledge Level (n=235).

		Knowledge level						X ²	P-Value
		Good (n= 65)		Fair (n = 95)		Poor (n = 75)			
		N	%	N	%	N	%		
Age (year)	18-<20	20	30.8	65	68.4	50	66.7	3.040	0.011*
	20- 22	45	69.2	30	31.6	25	33.3		
Marital state	Single	56	86.2	85	89.5	69	92	1.043	0.060
	Married	9	13.8	10	10.5	6	8		
Faculty	Foreign language	5	7.7	16	16.8	29	38.7	7.440	0.000**
	Tourism & hotel	6	9.2	11	11.6	25	33.3		
	Pharmacy	24	36.9	35	36.8	12	16.0		
	Nursing	30	46.2	33	34.7	9	12.0		
Gender	Male	30	46.2	45	47.4	40	53.3	1.006	0.072
	Female	35	53.8	50	52.6	35	46.7		
Residence	Urban	31	47.7	43	45.3	36	48	0.988	0.087
	Rural	34	52.3	52	54.7	39	52		
Source of information	Social media	12	18.5	66	69.5	52	69.3	5.543	0.009**
	Magazines	12	18.5	4	4.2	4	5.3		
	Physicians and nurses	26	40.0	5	5.3	1	1.4		
	Relatives	15	23.0	20	21	18	24		

*Significant at $p < 0.05$. **highly significant at $p < 0.01$.

Table 3, shows statistically significant differences between socio-demographic characteristics and knowledge level regarding age, faculty, university year and the information source: P value < 0.05 .

Regarding age, 69.2% & 33.3% aged 20 – 22 years old reports good & poor knowledge respectively. Also, regarding faculty type & 46.2% & 12.0% who reports good & poor knowledge respectively are faculty of nursing students. Regarding the information source, 40.0% & 1.4% who reports good & poor knowledge level respectively, obtain their information from physician & nurses.

Table (4): Correlation between Total Knowledge and Total Attitude among the Studied Students (n=235).

Item	Total attitude	
	Calculated r.	P value
Total Knowledge	0.431	0.001**

(**) Highly significant at $p < 0.01$

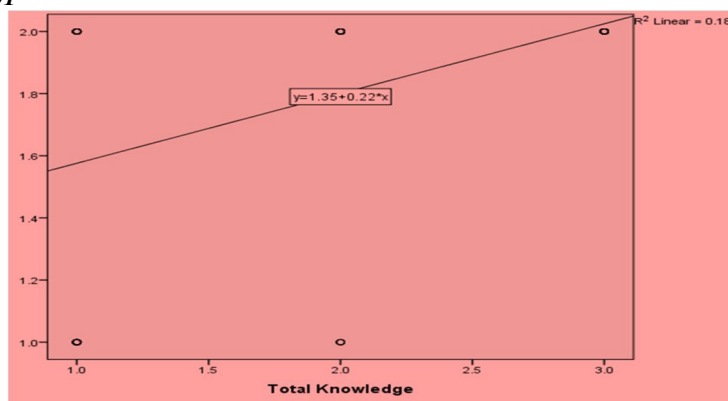


Table 4, shows that, there was positive correlation between the studied student’s knowledge and total attitude: P - value < 0.01 .

Discussion

Regarding demographic characteristics of the studied students, the present study findings indicated that more than half of the study sample aged 18<20 years, the mean age of student was 19.85 ± 3.71 years. Also, two thirds of the participant was female and two fifths of them were male. The majority of them were single. This is in the same line with **Alam (2017)**, who studied about "Knowledge and attitude towards organ donation among adult population in Al-Kharj, Saudi Arabia", found that, the mean age of 29.32 ± 9.32 years. There were three quarter males and one fifth was females.

Concerning the student's family members performed transplant, the current study result revealed that more than two thirds of students had no family members performed transplant and the majority of them use social media as a source of information. This is in the same line with **Sebastián-Ruiz et al. (2017)**, who studied "Knowledge and attitude towards organ donation of medicine students at a Northwestern Mexico public university" found that, three quarters of students would donate their own organs, mainly due to reciprocity and about a quarter of students would not donate, due to fear that their organs could be taken before death. From the investigator point of view, students may receive little information about organ donation during college. Despite that, most of them showed a positive attitude and are willing to donate.

The current study showed that less than one third of the studied students' had good knowledge, while more than one of them had fair knowledge. Additionally, one third of the studied students' had poor knowledge regarding organ donation and transplantation.

This is in the same line with **Lei et al. (2018)** who studied "level of organ donation-related knowledge and attitude and willingness toward organ donation among a group of university students in Western China" found that, three quarter of students agreed about final decision belongs to the doctor if a deceased patient has not consent an organ donor card. The interpretations of this result from the researcher point of view the students in the fourth year had more years in learning, so they had knowledge about the donation

The current study results of studied students regarding total attitude more than half of studied students had positive attitude and more one third of studied students had negative attitude. The interpretations of this result from the researcher point of view more than one third of the studied students had high and fair knowledge.

This is in the same line with **Houston et al. (2017)** who studied "A long-term intensive lifestyle intervention and physical function: the look AHEAD Movement and Memory study, obesity", found that student had the varying options and resource regarding organ donation and transplantation affect about physical, and psychological condition.

The current study results revealed the characteristics of the studied students and their attitude level. There was highly statistically significant relation between demographic characteristics and the type of attitude. Regarding age as three quarter aged 20-22 have positive attitude. Also, less than half of faculty of nursing have appositve attitude. More than half of the studied students, who have negative attitude, obtain their information from social media. More than half of the female have positive attitude with no significant differences.

This is in the same line with **Anderson (2016)** who studied "Effects organ transplantation about human body"

found that, less than half of the sample agreed with preparing to become an organ donor brings to mind undesirable thoughts of my own death and an intact body is needed for the life after death. From the investigator point of view, fears of bodily mutilation that considered the main point in the donor thinking and should over coming about it.

These results agree with **Naçar et al. (2019)** who studied "Knowledge Attitudes and Behaviors about Organ Donation Among First- and Sixth-class Medical Students: A Study from Turkey found that improvements in the total attitude of the study group.

As regards to relation between demographic characteristics (**age, faculty and the information source**) of the studied students and their attitude response in the studied sample, the present study revealed that there was positive relation between demographic characteristics of the studied students and their attitude responses. These results are in agreement with **Michihiro, et al., (2020)** who studied Narrative review on attitudes toward organ donation of undergraduate nurse students and found that statistically significant improvements of the study group regarding organ transplantation and organ donation.

Moreover the present study results were in agreement with **Ordin and Söylemez (2018)** who studied effects of peer education on attitudes toward organ donation among nursing students and found correlation between the studied student's overall knowledge and total attitude. Moreover, there was highly significance improvement in the studied student's total knowledge and total attitude.

The current study results revealed high statistically significant relation between demographic characteristics (age, faculty and source of information) of the studied students and knowledge level.

These results were in agreement with **Allahverdi et al. (2020)** who studied " Knowledge of Nursing Students About Organ Donation and the Effect of the Relevant Training on Their Knowledge" and found that, had significantly relation between studied Students' (age, educational levels) and better knowledge as well as practice among those who attending health education program about organ donation.

Conclusion

Based on the results of the present study, it can be concluded that:

Only around a quarter of Minia university students had sufficient awareness about organ donation and transplantation. When it came to the attitudes of Minia university students on organ donation and transplantation, it was discovered that more than half of the students polled had a favorable outlook. The level of knowledge and attitude of Minia university students about organ donation and transplantation had a positive correlation with their attitude.

Recommendations

Based on the results of the current study the following can be recommended:

1. Provide seminars for students to raise their knowledge about organ transplantation and donation.
2. Enrich the university library with necessary posters, booklets, and leaflets regarding organ transplantation and donation.

Provide extensive educational programs for students about organ donation and transplantation, and provide them with relevant information, including the benefits of organ donation and potential risks, so students can make broader thinking in the future

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