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Effectiveness of Computer-Assisted Teaching on Organ Donation Knowledge Among Non-Health Professional Students in Delhi

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Abstract

Background: Organ donation refers to the transfer of an organ or tissue from a living or deceased individual to a recipient in need of a transplant. In cases of organ failure, transplantation is often the most effective treatment option. Globally, kidney transplants are the most frequently performed procedure, as end-stage kidney disease (ESKD) is prevalent among patients.

Aim: To assess the Pretest knowledge level regarding organ donation among Non-Health Professionals students at selected college of Delhi, to evaluate the effectiveness of Computer assistance teaching on knowledge regarding organ Donation among Non–Health Professionals students at selected college of Delhi, to find an association between the pretest knowledge level regarding organ Donation with selected socio demographic variables.

Method:

A quantitative research approach with a pre- experimental research design was used for this study. The study was conducted among 60 non-health professional's students studying at selected college of Delhi using purposive sampling technique. Data was collected using Structured knowledge questionnaire to assess the knowledge of non-Health professionals.

Result:

The study revealed that in the pre-test, out of 60 participants, the majority, 49 (82%), had inadequate knowledge, while 11 (18%) demonstrated moderately adequate knowledge. Following the administration of computer-assisted teaching, a post-test was conducted, revealing a significant improvement in knowledge levels. The pre-test had a mean score of 2.38 (SD = 5.07), a mean difference of 14.2, and a range of 12. After computer-assisted teaching, the post-test mean score increased to 16.58 (SD = 5.07), with a mean percentage difference of 14.2 and a range of 15. The t-value was statistically significant at $p<0.05$. Among demographic variables, there was no significant association of pretest level of knowledge among non- health professionals.

Conclusion: The study concluded that a computer-assisted teaching significantly improved organ donation knowledge among non-health professional students ($p<0.05$). Most had inadequate knowledge pre-test, which improved post-test. There was no significant association of pretest level of knowledge among non- health professionals with demographic variables.

Key words: Organ Donation, Non- Health Professionals, Knowledge, Computer Assisted Teaching.

Introduction:

Organ donation involves transplanting a human organ from either a living donor or a brain-dead individual to another person for medical treatment. In recent times, there has been an increase in chronic and severe diseases

affecting the kidney, heart, lungs, and pancreas. In many cases, multiple organ failure occurs, even in younger patients. For these individuals, organ transplantation can serve as a critical, life-saving intervention.[1]

Despite advancements, public awareness and attitudes toward organ transplantation remain inadequate, even among well-educated individuals. The primary factors contributing to organ shortages include a lack of awareness and lack of accurate information, as well as widespread myths and misconceptions, often influenced by cultural and religious beliefs.[2]

In recent years, the demand for organ transplants has surged due to the rising prevalence of conditions such as diabetes, heart disease, and kidney failure. However, the global shortage of available organs compared to the growing need has led to preventable deaths among patients on transplant waitlists.[3]

The demand for organs for transplantation continues to surpass the limited global supply, creating a significant challenge in the field of transplantation. One of the primary obstacles is the lack of public awareness and accurate information, along with widespread misconceptions that lead to hesitation in organ donation. In Western countries, the majority of organ donations (90%) come from brain-dead donors, while only 10% are from living donors. In contrast, India sees approximately 95% of transplants originating from living donors, with just 5% coming from brain-dead individuals.[4]

Providing accurate knowledge and raising awareness among the public is essential for the success of organ donation programs in India. Health professionals, particularly medical doctors, play a crucial role in this process. As the primary point of contact with patients and their families, they have the responsibility to educate, address misconceptions, and eliminate barriers related to organ donation. By fostering trust and clear communication, they can encourage more people to consider organ donation, ultimately improving the availability of life-saving transplants.[5]

The gap between the demand and availability of organs may be attributed to a lack of awareness and a negative attitude toward organ donation. Several factors have been identified as potential obstacles to the successful implementation of organ donation programs in India, including limited understanding of brain death, religious beliefs, superstitions related to rebirth, concerns about organ misuse, perceived health risks of donation, and disagreement among family members. It is essential for non-health professionals to be well-informed about organ donation. Recognizing this need, the researcher aimed to enhance knowledge and awareness on the topic. Therefore, the present study was conducted to evaluate the knowledge of non-health professionals.

Material And Method

Study setting and design:

Between January and May 2024, we conducted a study by using a pre- experimental research design in a selected college of Delhi, that focused on the knowledge of non- health professionals. Each participant was selected by using purposive sampling technique.

Study population:

Our target population was the non-health professional college students in a selected college of Delhi.

Sample size and sampling procedure

Sample comprised of non-health professional college students in a selected college of Delhi. We determine the sample size by using Rao software considering 95% confidence level and 5% of margin of error, 60 students were selected who were studying in a selected college of Delhi.

Study procedure

The study was commenced after getting approval from the administrative authority of the selected hospital and Ethics committee.
The purpose of the study was explained to participants, and written informed consent was taken. The sociodemographic details (Age, Gender, Religion, Residential area, Awareness regarding organ donation, Sources of information, Willingness to donate organ, Willingness to donate relative's organ) were collected through a semi structured questionnaire. Structured knowledge questionnaire was developed by a researcher to assess the knowledge of non- health professionals in a selected college of Delhi.

Main outcomes

The main outcomes of this study were the assessment of the knowledge of non- health professionals in a selected college of Delhi. For this purpose, the structured knowledge questionnaire was used to assess the knowledge of of non- health professionals in a selected college of Delhi. It is a valid and reliable tool with test-retest method by using Karl Pearson coefficient correlation with reliability 0.80. Structured knowledge questionnaire that sought to gather information regarding knowledge of non- health professionals comprised of 30 questions.

Statical analysis

We employed descriptive and inferential statics, such as frequency, percentage, mean and standard deviation to describe the socio demographic characteristics, and knowledge of non-health professionals. To find out the association between the pretest knowledge level regarding organ donation with selected socio demographic variables, Chi square / Fisher's Exact Test was used. The criteria for statical significance were set at $P < 0.05$. For the purpose of statical analysis, statical package for the social sciences (SPSS) 26.0 software was used.

Study variables

We selected the study variables based on previous researcher's about factors associated with the organ donation.

We considered the following socio demographic variables: Age, Gender, Religion, Residential area, Awareness regarding organ donation, Sources of information, Willingness to donate organ, Willingness to donate relative's organ

Data Collection

Method used for data collection in the study was through paper and pencil method and face to face interaction. For this, we employed Questionnaire for demographic profile. For assessing the knowledge of non- health professionals, a structured tool was used.

Result

Table 1: Frequency and Percentage Distribution of samples as per their Demographic Characteristics (Age, Gender, Religion, Residential area, Awareness regarding organ donation, Sources of information, Willingness to donate organ, Willingness to donate relative's organ). n=60

S.No.	Demographic Variables	Non-Health Professionals students	
		Frequency	Percentage (%)
1.	**Age**		
	17-18 years	48	80
	19- 20 years	12	20
	21-22 years	0	0
	Above 22 years	0	0
2.	**Gender**		
	Male	29	48
	Female	31	52
3.	**Religion**		
	Hindu	46	77
	Christian	11	18
	Muslim	3	5
4.	**Residential area**		
	Urban	44	73
	Rural	16	27

5.	**Do you know regarding organ donation?**		
	Yes	34	57
	No	26	43
6.	**If yes, sources of information**		
	Media	28	47
	Health professionals	23	38
	Family member and relatives	3	5
	Friends and neighbours	6	10
7.	**Are you willing to donate organ?**		
	Yes	48	80
	No	12	20
8.	**Are you willing to donate your relatives organ?**		
	Yes	52	87
	No	8	13

The demographic data present in table 1 shows:

In terms of age, the majority of participants, 48 (80%), were between 17-18 years, regarding gender, 29 (48%) of the participants were male, in terms of religion, most participants, 46 (77%), were Hindus, regarding the place of residence the majority, 44 (73%) resided in urban areas, in terms of awareness of organ donation majority 34(57%) knew about organ donation, regarding Sources of information majority 28(47%) knew about organ donation through media, regarding willingness to donate the organ majority 48(80%) were willing to donate organ, regarding willingness to donate the relative organ majority 52(87%) were willing to donate their relative's organ.

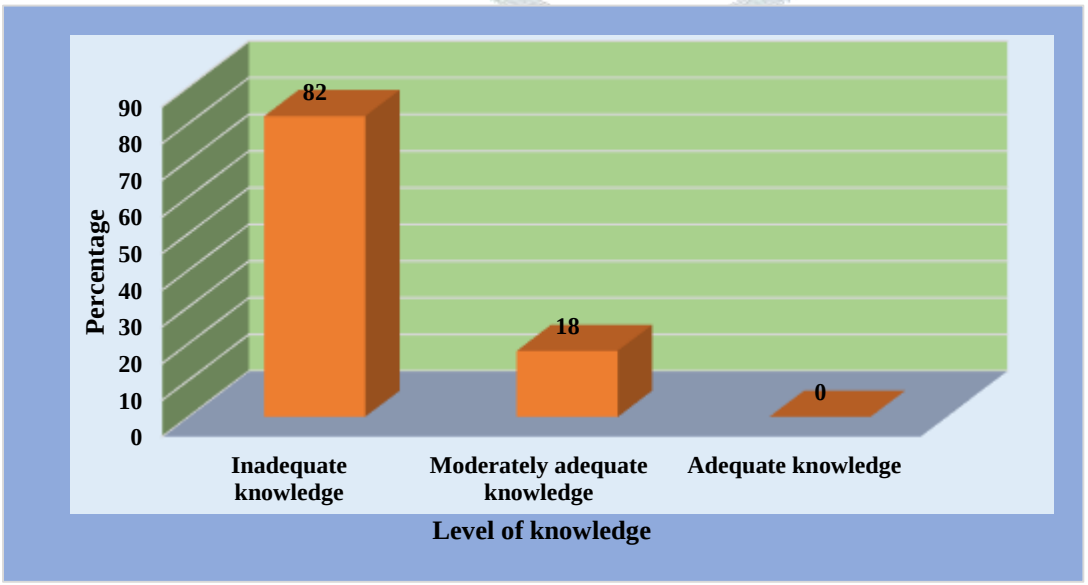

Figure 1: Bar diagram showing the Frequency percentage distribution of pretest level of knowledge regarding organ donation among non-health professionals.

The data presented in Figure 1 among the 60 participants in the pretest, the majority, 49 (82%), had inadequate knowledge, while 11 (18%) demonstrated moderately adequate knowledge. None of the participants had adequate knowledge. The post-test was administered after computer assisted teaching regarding organ donation.

Table 2: Frequency, percentage, mean, median, Standard Deviation (S.D) and Range of obtained scores of non- health professionals n=60				
Level of knowledge	**Frequency (f)/ Percentage**	**Mean and (S.D)**	**Median**	**Range of obtained score**
Inadequate knowledge	49 (82)	7.93 (4.05)	7.96	30
Moderately adequate knowledge	11 (18)			
Adequate knowledge	0 (0)			
No Barrier	0			

The data presented in table 2 shows that the majority of non-health professionals (82%) had inadequate knowledge, while 18% had moderately adequate knowledge. No participants had adequate knowledge. The mean score was 7.93, median was 7.96, and standard deviation was 4.05, indicating a low and fairly consistent level of knowledge. The score range was 30, suggesting a wide gap between the lowest and highest possible scores, though most scores were on the lower end.

Table 3: Chi Square Test showing the association between the pre-test level of knowledge with their selected demographic variables among non-health professional's students. n=60				
S.No.	**Demographic variables**	**Non-Health Professional students**		x^2
		Frequency	**Percentage (%)**	
1.	**Age**			
	a) 17-18 years	48	80	x^2=0.063
	b) 19-20 year	12	20	Df=1
				P=0.802
				NS
2.	**Gender**			
	a) Male	29	48	x^2=0.00
	b) Female	31	52	Df=1
				P=1.000
				NS
3.	**Religion**			
	a) Hindu	46	77	x^2=1.288
	b) Christian	11	18	Df=2
	c) Muslim	3	5	P=0.522
				NS
4.	**Residential area**			

	a) Urban b) Rural	44 16	73 27	x^2=1.169 Df=1 P=0.280 NS
5.	**Do you know regarding organ donation?** a) Yes b) No	 34 26	 57 43	x^2=0.000 Df=1 P=1.000 NS
6.	**If yes, source of information** a) Media b) Health Professionals c) Family members and relatives d) Friends and neighbour	 28 23 3 6	 47 38 5 10	x^2=1.071 Df=3 P=0.784 NS
7.	**Are you willing to donate organ?** a) Yes b) No	 48 12	 80 20	x^2=0.063 Df=1 P=0.802 NS
8.	**Are you willing to donate your relatives organ?** a) Yes b) No	 52 8	 87 13	x^2=1.029 Df=1 P=0.310 NS

$p \leq 0.05$, significant *

The data in table 3 shows that there was no significant association of pretest level of knowledge among non-healthcare professionals with other variables (age, gender, religion, residential area, do you know regarding organ donation, if yes source of information, are you willing to donate organ, and are you willing to donate your relative organ).

DISCUSSION

The present study assessed among the 60 non-health professional students, the pre-test results showed that 49 (82%) had inadequate knowledge, while 11 (18%) had moderately adequate knowledge, with no participants achieving an adequate knowledge score on organ donation. The above findings are supported by the study conducted by Jalala Azmandian[6] (2013), which found that prior to education, knowledge about three specific organs—lungs, pancreas, and bone marrow—was limited to 7.3%, 57.5%, and 54.2%, respectively. However, after education, awareness significantly increased to 95%, 91.7%, and 80%, respectively.

The findings indicated the mean, standard deviation (SD), range, mean difference (MD), and t-value of knowledge scores among non-health professional students before and after the computer-assisted teaching program on organ donation. The data reveals that the pre-test mean knowledge score was 2.38 with a standard deviation of 5.07, while the post-test mean knowledge score increased to 16.58 with a standard deviation of

5.07. The observed mean difference of 14.2 indicates a substantial improvement in knowledge levels after the intervention.

A paired t-test was conducted to assess the significance of this improvement. The computed t-value (15.34) was found to be greater than the critical t-value at df = 59, confirming statistical significance ($p < 0.05$). Thus, the results suggest that the computer-assisted teaching program was highly effective in enhancing knowledge about organ donation among non-health professional students.

The above findings are supported by a quasi-experimental study conducted by Rykhoff ME et al[7]. (2010) in Canada. The study aimed to assess the knowledge, attitudes, and beliefs of health sciences college students regarding organ donation and to determine whether an educational session could enhance awareness and influence their attitudes. The results showed that after the intervention, 86% of participants had increased awareness of organ donation, and the percentage of those willing to donate their organs rose from 52% to 63%. The study concluded that educational sessions effectively enhance awareness of organ and tissue donation.

The findings indicated that there was no significant association of pretest level of knowledge among non-healthcare professionals with other variables (age, gender, religion, residential area, do you know regarding organ donation, if yes source of information, are you willing to donate organ, and are you willing to donate your relative organ).

The above findings are supported by a quasi-experimental study conducted by Vicky Cardenas et al[8]. (2010) to evaluate the effectiveness of classroom education on knowledge and attitudes toward organ donation and to examine the association between post-test knowledge levels and demographic variables. The study concluded that students who received the educational intervention showed a positive change in their willingness to donate. It also found that willingness to donate organs was significantly associated with post-test knowledge scores.

The findings indicated a significant association between post-test attitude scores and the selected demographic variables, namely gender and willingness to donate a relative's organ.

The above findings are supported by a cross-sectional study conducted by Jonathan Ling[9] (2013) in the UK, which examined the attitudes of British adults toward donating their own organs and those of their family members. The study found that the majority were in favour of donating a relative's organs, with female respondents being more likely to agree to do so.

Limitations

- As no standardized tools were available, the investigator developed a tool specifically for the study.
- The multiple-choice questionnaire may have influenced teacher education students to respond more easily, increasing the likelihood of obtaining average or good scores by chance. This was a limitation of the tool.
- The study was confined to a small number of subjects which limits the generalization that can be made.
- The study was conducted without a control group.

Recommendations

Based in the findings, following recommendations are offered for the future research:

- Ongoing educational sessions on organ donation should be held periodically to ensure public awareness.
- A large-scale study involving diverse demographic characteristics can be conducted to enhance the generalizability of the findings.
- A comparative study can be conducted to evaluate the knowledge, practices, and attitudes toward organ donation among health professional and non-health professional students.

Conclusion: The study concluded that the majority, 49 (82%), had inadequate knowledge, while 11 (18%) demonstrated moderately adequate knowledge.

Ethical Approval

The study was approved by the Ethical Institutional Committee New Delhi. We obtained informed consent either in written. This study followed established ethical guidelines for Medical Research involving Human subjects and the Helsinki declaration of 1975, as revised in 2008.

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Nil

Conflicts of interest

There is no conflict of interests.

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