

# The Effectiveness of Organ Donation Education on Knowledge and Attitude among Intensive Care Nurses

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## Abstract

Every day, the needs for organ donation are increasing while the number of organ donors is significantly lower and unable to meet the demand. To successfully promote organ donation, it is important that Intensive Care Nurses have highest level of knowledge and positive attitude towards organ donation because they play a vital role in improving organ donation rates. Organ donation education has shown increased knowledge and positively influenced attitude among Intensive Care Nurses about donor eligibility and brain death. The purpose of this study was to evaluate the effectiveness of organ donation education on knowledge & attitude among Intensive Care Nurses. A one-hour organ donation education and educational leaflet was given to 63 of registered nurses. A Structured administered questionnaire on knowledge and attitude scale was used before and after intervention. The finding of the study showed the respondent's knowledge and attitude on organ donation has been increased after attending organ donation education and organ donation education gives the greatest effect on knowledge and attitude of Intensive Care Nurses toward organ donation.

**Keywords:** Effectiveness, Organ Donation Education, Knowledge, Attitude, Intensive Care Nurses.

## Introduction

Today, organ donation among the world community is not a new phenomenon and with an advance in modern medical science, it has benefited many patients with organ failure (Nordin et al., 2012). According to Ramadurg and Gupta (2014), organ donation is a medical procedure which involves process of donating organs or tissue from a living or dead person to be transplanted into living recipients who, in many cases, is very ill or dying. It is proven to save lives or improves quality of life (Emami & Kohan, 2019).

Every day, the need for organ donation increases worldwide due to organ insufficiencies caused by chronic disease (Oluyombo et al., 2016). However, the numbers of patients who

need the organs are increasing while the number of donors who come forward to donate is significantly lower. A persistent shortage of organs and inexhaustible waiting lists continue to result in many people dying awaiting transplantation (Janatolmakan et al., 2020). The similar scenario also takes place in Malaysia when there is a shortfall in the number of organs available for transplantation (Edmund et al., 2018). Despite organ transplantation being available in Malaysia since 1975, there were only 86 transplants carried out and a mere 35 deceased organ donations made in 2017 (International Registry in Organ Donation and Transplantation, 2017; Foong et al., 2018). Transplantation from organ donation after death is extremely rare and unable to fulfill the demand.

Collin (2005) stated lack of knowledge and personal attitudes among nurses especially in Intensive Care Unit (ICU) on the concept of organ donation and brain death is one of the factors that continue to impede donation and contributed to the shortage of organ donors. Moreover, with the evidence of literatures, lack of knowledge and personal attitude also is due to inadequately information and trained regarding organ donation (Lin, Lin, & Chen, 2014). As consequences, the nurses are not confident to carry responsibilities in the donation process. This resulting them missing opportunities and failed to identify the suitability of the potential donors and initiate the referral to the organ procurement organization.

Knowledge, attitude, everyday practice and confidence in the law have been found to be major factors, with most of studies concluded this to be significant in influencing nurse's participation in organ donation (Vlaisavljevic & Zivanovic, 2018). Adequate knowledge and level of education increases nurses' self-confidence and were the factors effecting acceptance and willingness to be involved in organ harvesting efforts.

International literature shows in western countries, majority of nurses and health professionals have a positive opinion about organ donation. However, a negative finding is very small percentage are practice in promoting organ donation and transplantation (Hoseini, Manzari, & Khaleghi, 2015). Majority of the nurses was agreed organ donation is important in saving a life, but they did not participate and never discuss with the family of potential donor regarding the issues of organ donation.

In successfully promote organ donation and transplantation, it is important that intensive care nurses to have higher knowledge and positive attitude toward organ donation (Carikoglu et al., 2018). They may be responsible for referring potential donor cases to an organ procurement organization, making the request for donation, initiating the organ donation process and support the families preparing to donate their loved ones' organs by briefing them pertinent information. Their overall involvement in the organ donation process places intensive care nurses in a position to increase the supply of organs for donation.

Through effective education program, knowledge about the organ suitable for donation and methods available for registration could help improve the knowledge, create positive attitude, remove significant barriers and this indirectly may increase the number of organ donors in Malaysia.

## **Methodology**

The study was conducted at ICU in Serdang Hospital, Selangor. The Department of Anesthesia and Intensive Care provides intensive care services and this hospital functioning as cardiac referral center. Furthermore, Serdang Hospital is one of the hospitals which promote organ donation programme.

The design of this study was experimental with one group pre test and post test group on the same population. The principles are intervention has been given with no control group through MS Power Point presentation during Continuous Nursing Education (CNE) in seminar setting and educational leaflet from National Transplant Resource Centre. The education session has been divided into 3 sessions and every session consists of 20 nurses. The organ donation education was given by the credited personnel which is Organ Donation and Transplantation Coordinator in Serdang Hospital.

The population in this study comprised of registered nurses in ICU Serdang Hospital. The target populations are 71 of registered nurses working there. However, only 63 of the nurses were participated in this study.

The questionnaires have divided into three parts. Part A included the standard question to gather respondent's general information. Part B was regarding the knowledge on organ donation and part C consisted of the question about attitude toward organ donation.

Part B covering 15 items which tests the knowledge regarding organ donation. Multiple-choice questions (MCQ) are selected and for each questionnaire, four options were given. The respondents are required to select only one correct answer. Respondents who selected a correct choice from a certain item were considered to have knowledge on that item. Respondents who selected wrong choice and who did not answer the question are consider do not have knowledge. For each questionnaire, the correct answer was given 1 score and if the answer was wrong, the score given was 0. The highest score was 15. The knowledge score was classified in three categories which 0-5 is considered poor, 6-10 as average and 11-15 is having a good knowledge.

Attitude of respondents regarding organ donation was measured used 5-point Likert scale. The questions consist of 15 statement regarding attitude of the intensive care nurses toward organ donation. Out of this, 7 statements stating positive attitude and 8 statement stating negative attitude regarding organ donation. All the items have five response choices. For the positive statement, the attitude was ranged from strongly disagree = 0 point, disagree = 1, undecided = 2, agree = 3 and strongly agree = 4 point and for negative statement, the attitude was ranged from strongly agree = 0 point, agree = 1, undecided = 2, disagree = 3 and strongly disagree = 4 point. The interpretation of attitude score was 0 – 20 marks was negative attitude, 21 – 40 marks was average attitude and 41 – 60 marks was positive attitude toward organ donation. The highest score for this part was 60 marks. Highest scores showed more favorable attitude toward organ donation and lowest score is otherwise.

The questionnaire with information letter and a consent form attached to it are handed out by researcher to intensive care nurses. A code number was used in a place of participants name. The participants were asked to answer the questionnaire before the education given. Organ donation education was given in 1 hour time and immediate post test was conducted

using the same tool after administration of education. Second post test was conducted with an interval of 2 weeks after education to assess the retention of knowledge toward organ donation.

Statistical Package for Social Sciences (SPSS) version 21.0 was used for data processing and analysis purposes. The results of this study were analyzed using descriptive and inferential statistics. Descriptive statistics were used to assess the sociodemographic variables of the respondents. Inferential statistics was analyzed using Paired t-test to compare the pre-test and post-test knowledge and attitude and to evaluate the effectiveness of organ donation education.

To establish the validity of questionnaire, the prepared instrument along with the scoring key and attitude scale was validated by 3 expert who is Director of National Transplant Resource Center (NTRC), one Senior Supervisor in NTRC and one Organ Transplant Coordinator. Some of the question was modified and arrangement of the options was done in proper way according to suggestion of the expert in this study. Internal consistency reliability has been test using Cronbach Alpha and the result showed 0.72.

## Results

Demographic data that have been asked in the early part of the questionnaire were analyzed using descriptive statistic tests. The total number of respondent ( $n$ ) and percentage of the demographic data were tabulated in Table 1. As shown in Table 1, almost half of the respondents (65.1%,  $n = 41$ ) were 22-28 years old. A (27%,  $n = 17$ ) were 29-35 years old and whereas (7.9%,  $n = 5$ ) of the respondents were 36-43 years old. The gender of the respondents was (3.2%,  $n = 2$ ) of male and (96.8%,  $n = 61$ ) was female. Majority of the respondents (88.9%,  $n = 56$ ) are Muslim, (4.8%,  $n = 3$ ) are Buddha, (4.8%,  $n = 3$ ) are Hindu and only (1.6%,  $n = 1$ ) is Christian. The levels of education of respondents are (76.2%,  $n = 48$ ) have diploma, followed by (17.5%,  $n = 11$ ) have post basic certificate and (6.3%,  $n = 4$ ) have Bachelor of Nursing. The working experiences in ICU among the respondents are (39.7%,  $n = 25$ ) working 1-5 years, (38.1%,  $n = 24$ ) working for 6-10 years and (22.2%,  $n = 14$ ) working for 11-16 years. The frequency for all variables are presented in table 2.

Table 1  
*Socio-demographic data of respondents*

Variable	Frequency ( $n$ )	Percentage (%)
Age		
22-28 years old	41	65.1
29-35 years old	17	27
36-43 years old	5	7.9
Gender		
Male	2	3.2
Female	61	96.8
Religion		
Muslim	56	88.9
Buddha	3	4.8
Hindu	3	4.8
Christian	1	1.6

Education		
Diploma	48	76.2
Post Basic Certificate	11	17.5
Bachelor	4	6.3
Experience		
1-5 years	25	39.7
6-10 years	24	38.1
11-16 years	14	22.2

The knowledge regarding organ donation among nurses was assessed with the topic on organ transplantation, organ for donation, indication and contraindication, maintenance of organ, brain death and role of nurses in organ donation.

Table 2 presented the total number and percentage of respondents for knowledge on organ donation in pre test, post test 1 and post test 2. The knowledge for the pre test showed that 27% ( $n=17$ ) of respondents having poor knowledge, 55.5% ( $n=35$ ) having average knowledge and 17.5% ( $n=11$ ) of respondents having good knowledge on organ donation.

The knowledge on the post 1 test (immediate test) showed none of the respondents having poor knowledge, 23.8% ( $n=15$ ) having average knowledge and 76.2% ( $n=48$ ) of respondents having good knowledge after attending organ donation education. For the post test 2 (2 weeks after education) showed none of the respondents having poor knowledge, 25.4% ( $n=16$ ) having average knowledge and 74.6% ( $n=47$ ) of respondents having good knowledge after attending organ donation education.

Table 2  
*Level of knowledge score on organ donation*

Level of knowledge	Pre test		Post test 1		Post test 2	
	Frequency	%	Frequency	%	Frequency	%
Poor	17	27.0	0	0.00	0	0.00
Average	35	55.5	15	23.8	16	25.4
Good	11	17.5	48	76.2	47	74.6

Table 3 presented the total number of respondents with their frequency for attitude on organ donation in pre test, post test 1 and post test 2. The attitude for the pre test showed that 1.6% ( $n=1$ ) of respondents having negative attitude, 93.7% ( $n=59$ ) having average attitude and 4.8% ( $n=3$ ) of respondents having positive attitude toward organ donation.

The attitude on the post test 1 (immediate test) showed none of the respondents having negative attitude, 34.9% ( $n=22$ ) having average attitude and 65.1% ( $n=41$ ) of respondents having positive attitude after attending organ donation education. For the post test 2 (2 weeks after education) showed that none of the respondents having negative attitude, 39.7% ( $n=25$ ) having average attitude and 60.3% ( $n=38$ ) of respondents having positive attitude after attending organ donation education.

Table 3

*Attitude toward organ donation*

Attitude	Pre test		Post test 1		Post test 2	
	Frequency	%	Frequency	%	Frequency	%
Negative	1	1.6	0	0.00	0	0.00
Average	59	93.7	22	34.9	25	39.7
Positive	3	4.8	41	65.1	38	60.3

Table 4 presented the effectiveness of organ donation education intervention on knowledge among Intensive Care nurses. A paired-sample t-test was conducted to evaluate the effectiveness of organ donation education on knowledge of respondents from pre test to post test 1, pre test to post test 2 and post test 1 to post test 2. There was statically significant difference in increasing respondent's knowledge from pre test ( $M=7.76$ ,  $SD=2.94$ ) to post test 1 ( $M=12.59$ ,  $SD=2.13$ ),  $t=-24.06$ ,  $p=.001$ , and from pre test ( $M=7.76$ ,  $SD=2.94$ ) to post test 2 ( $M=12.49$ ,  $SD=2.19$ ),  $t=-21.76$ ,  $p=.001$ . However, there was no statistically significant difference in knowledge in post test 1 ( $M=12.59$ ,  $SD=2.13$ ) to post test 2 ( $M=12.49$ ,  $SD=2.19$ ),  $t=.540$ ,  $p=.591$ .

Table 4

*Effectiveness of organ donation education on knowledge*

Knowledge	Time	Mean	SD	t value	p value
Pair 1	Pre test	7.76	2.94	-24.06	<b>0.001</b>
	Post test 1	12.59	2.13		
Pair 2	Pre test	7.76	2.94	-21.76	<b>0.001</b>
	Post test 2	12.49	2.19		
Pair 3	Post test 1	12.59	2.13	.540	0.591
	Post test 2	12.49	2.19		

Table 5 presented the effectiveness of organ donation education intervention on attitude among Intensive Care nurses. A paired-sample t-test was conducted to evaluate the effectiveness of organ donation education on attitude of respondents from pre test to post test 1, pre test to post test 2 and post test 1 to post test 2. There was statically significant difference in changing positive attitude among respondent from pre test ( $M=30.84$ ,  $SD=5.17$ ) to post test 1 ( $M=43.86$ ,  $SD=6.85$ ),  $t=-20.81$ ,  $p=.001$ , and from pre test ( $M=30.84$ ,  $SD=5.17$ ) to post test 2 ( $M=42.63$ ,  $SD=5.99$ ),  $t=-18.95$ ,  $p=.001$ . However, there was no statistically significant difference in attitude of respondents in post test 1 ( $M=43.86$ ,  $SD=6.85$ ) to post test 2 ( $M=42.63$ ,  $SD=5.99$ ),  $t=1.49$ ,  $p=.139$ .

Table 5  
Effectiveness of organ donation education on attitude

Attitude	Time	Mean	SD	t value	p value
Pair 1	Pre test	30.84	5.17	-20.81	<b>0.001</b>
	Post test 1	43.86	6.85		
Pair 2	Pre test	30.84	5.17	-18.95	<b>0.001</b>
	Post test 2	42.63	5.99		
Pair 3	Post test 1	43.86	6.85	1.49	0.139
	Post test 2				

## Discussion

Ongoing education related to organ donation for nurses are one of the strategies would give the direct impact in enhancing knowledge, attitude and management of donation patient in clinical practice. The finding of this study supported the hypothesis that with education on organ donation, nurses can increase their knowledge and create positive attitude toward organ donation.

The results of this study revealed that knowledge and attitude among the nurses can be substantially improved by organ donation education. Generally, the nurses in this study have a little knowledge regarding organ donation and majority of nurses having average knowledge before receiving organ donation education. Several other studies have shown that organ donation education can be effective increasing knowledge, willingness to talk about organ donation with family members and more often carries of an organ donor card (Steenart et al., 2019). In that sense, the result of this study is in line with previous study. Through organ donation education, nurses can increase the knowledge on this topic which proved by there was statistically significant difference in increasing respondent's knowledge from pre test to post test 1 and post test 2. As demonstrated by Bijani et al (2020), the mean score of knowledge and attitude in the group was increased after implementation of the educational program and a significant relationship was found between post test with knowledge and attitude on organ donation.

Lack of knowledge on absolute contraindication has been recorded among the nurses in the pre test. There are only 39.7% (n=25) of nurses responded correctly to question testing their knowledge about contraindication of organ donation. This finding was relatively similar to the results of studies conducted by Collin (2005) which stated nurses were unsure about the exact contraindications for organ or tissue donation.

Knowledge on organ maintenance also has been reported at highest wrongly answered among the nurses. Majority of nurses showed lack of information on organ maintenance before attending an organ donation education. Since organ maintenance is an important part in organ donation process, it is fundamental for nurses to know this particular subject. This finding was similar with study by Farahani and Abbasi (2012), which demonstrated most of healthcare providers having less of information on how to maintain the organ before it can be transplanted.

Attitudes toward organ donation are fundamental because nurses played a significant role to deal with potential donor and the grieving family. Based on the finding of this study, 1.6% (n=1) of nurses having negative attitude, 93.7% (n=59) on average attitude and 4.8% (n=3) of nurses having positive attitude toward organ donation before education was given.

The positive finding regarding the attitude of nurses in this study showed the positive attitude toward organ donation has been occurred after receiving an educational program. The attitude on the post test 1 (immediate test) showed none of the nurses having negative attitude, and 65.1% (n=41) of nurses having positive attitude after attending organ donation education. Majority of nurses 88.9% (n=56) agreed and strongly agreed that organ donation is a merciful act and 65.1% (n=41) of nurses agreed and strongly agreed donation organ to another person improve sense of humanity. The result indicates majority of nurses and health professionals have a positive opinion about organ donation. The nurses may consider the knowledge gained during organ donation education is very valuable and should be practiced in order to ensure the successful of the organ donation promotion. Similarly, the study by Gezginci, Goktas, & Caglayan (2020) also reported most of the nurses holded a positive attitude regarding organ donation. Although most of them (91.8%) did not donate their organs, 84.1% of them were willing to donate.

The finding of this study also demonstrated that nurses can change the attitude to a positive site after attending organ donation education. The result also indicated there was statically significant difference in changing positive attitude among respondent from pre test to post test 1 and post test 2. This finding was similar with study conducted in Italy by Potenza et al (2015), demonstrated that effective education on organ donation to nursing student, resulting in a marked improvement in their knowledge, attitude and motivation. The misconception on nurses' role in organ donation process has been decreased while they increased their motivation after education sessions.

The impact of education can lead to growing the number of referral potential organ donors in ICU. Similar findings were established in Jelinek et al (2012) which found education and training on organ donation can create positive attitude and influence healthcare provider's participation in donation management. Through education, healthcare providers can assist in the identification of potential donors and maximize utilization of the current donor pool.

Study by Park et al (2019) in an Asian country also demonstrated the implementation of training or educational teaching program to improve organ procurement has proven to be successful in many cases. Training or educating the nurses especially in donor detection, legal or organizational issues can develop nurses' skill to approach families. It is proved to increase the number of organ donors in many countries and one of the key areas in promoting organ donation. It has been acknowledged that formal training on organ donation can successfully influence nurses' attitudes, encourage communication and registration behaviors and help improve knowledge on donor eligibility and brain death.

This supported by McGlade & Pierscionek (2013), the knowledge on organ donation can be substantially improved by education and nurses can heighten their knowledge about organs suitable for donation and regulations that govern the process of organ donation during their education session. From the study, they concluded there is a relation between the low level



of knowledge and the low number of referral potential organ donors. They emphasized that more attention in nursing education should be done in order to facilitate nurses understanding to encourage them involved in donation process.

The last finding in this study, there was no statistically significant difference in knowledge and attitude in post test 1 to post test 2. This deficiency happened due to constraint of time causing the retention of knowledge after receiving educational intervention cannot be analyzed properly. Furthermore, this is the first education session was conducted specifically to the nurses in the ICU, so it is difficult to determine the effectiveness of education session in retaining the knowledge among the nurses. It is believed that even though the comprehensive information has been given to improve the knowledge and attitude, nurses may need frequent educational session to encourage the knowledge to be retained in their mind. As suggested by Radunz, Benko, Stern, Saner & Paul (2015), effective educational programs must continue to be the main source of information regarding organ donation.

### **Conclusion**

Knowledge on organ donation and transplantation is one of the factors which can contribute to the successful of organ donation promotion. Nurses as part of the health providers, is fundamental to have sufficient knowledge on organ donation because it is important part of the chain in organ acquisition.

A short educational programme such as presentation during CNE session can effectively increase nurses' knowledge and positively influence nurse's ability to discuss on organ donation with the family of potential donor. The effect of education, whether in a short period can emphasize various aspects of organ donation and procurement.

In conclusion, organ donation education has been identified as an access point to changing individual knowledge and attitude towards organ donation. This study has shown a positive relationship between education and improving knowledge and changing attitude of nurses. The organ donation education proved to be an effective way to increasing knowledge and influencing positive attitude among the nurses. Further study is needed to evaluate the long-term effects education has on the knowledges and attitudes towards organ donation. Different teaching method should be done in future research to evaluate which types of education is more effective to improve knowledge and influence positive attitude among the nurses.

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