

Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related: A Systematic Review

Abstract:

Introduction: The importance of nurses' roles in the process of organ transplantation and regarding the results of studies proving the positive effect of nurses in the process, this question arises that "What is " the Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related ?

The existence of a direct correlation between positive attitudes of treatment-caring medical team, especially nurses, with the level of consent on organ donation, nurses' knowledge and attitudes were the important subjects of different studies. However, no clear conclusion responding to the stated question has been drawn. The aim of this study is clarifying " the Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related?

Methods: Studies were searched through databases such as web ProQuest, Medscape, MedlinePlus, Magiran, PubMed, and Science Direct within the years 1990-2015 on the subject of interest by keywords knowledge, attitude, organ donation and nurses.

Results: Awareness and knowledge are important factors in determining nurses' attitude, and this awareness should be applied to create positive attitude among those participating in the process of organ donation. Extensive clinical knowledge should be made on organ donation and communication skills among ICU nurses through training programs.

Conclusion: Using standard guidelines or scheduled training programs in nursing universities or offering such courses can improve nurses' level of awareness, which leads to a proper performance. Results show that nurses' positive attitude and knowledge can affect families' opinion conducting organ donation.

Key words: knowledge, attitude, organ donation, nurses

Introduction

Organ and body tissue transplantation is an effective treatment for the ending stages of certain organs such as liver, heart and lungs capable of greatly enhancing patients' life quality(1, 2) . Based on the considerations regarding immunologic transplantations, organs maintenance and surgical techniques, organ transplantation has been applied as an effective treatment for patients. Since the last 200 years, the need for transplantation has been increased. According to the statistics of organ transplantation site (OPTN), more than 120000 individuals are in the waiting list of transplantation increasing by one individual every minute, 21 of whom die every day(3, 4). Nurses have an important role in recognizing potential organs for transplantation, taking families' consent for transplantation, general training and performing nursing cares(5). Today, the focus of nursing cares in special units has been replaced by nursing cares in organ transplantation process, and subsequently, nurses' roles are also changed(6) . Regarding the results of different studies, nurse's involvement in the process of organ transplantation is the most positive and rewarding part of this profession, and nurses play a crucially important role in this regard. People's ideas and attitudes strongly affect different aspects of organ and tissue transplantation(7). In addition to general awareness, awareness level and attitudes of medical staff are highly important(8). This is due to their role in different process of organ and tissue donation; from recognizing potential donor to extracting organs and tissues. Among other factors effective in the process of medical staff's decision-making and their participation, we can mention their clear definition about brain death, organs maintenance and current rules and regulations(9). By creating a positive attitude toward organs and tissues donation and declaring its effectiveness in surviving patients and preventing disabilities, it would be possible to create a positive motivation and atmosphere among medical staff, and consequently, increase the number of donors. This, undoubtedly, will end in a better result

for the process of transplantation and future programming(10). In some cases, organ and tissue transplantation is the only way for saving patients' lives. Considering the importance of nurses' roles in the process of organ transplantation and regarding the results of studies proving the positive effect of nurses in the process, this question arises that "What is the level of nurses' knowledge and attitude toward organ donation process? And in this regard, what are the influencing factors?"

There are many surveys conducted on knowledge and attitudes of nurses regarding organ donation which endorse their role in the process of organ donation and their effect on decision-making and the way this transplantation is carried. In addition, regarding the existence of a direct correlation between positive attitudes of treatment-caring medical team, especially nurses, with the level of consent on organ donation, the level of nurses' knowledge and attitudes was the important subject of different studies. However, no clear conclusion responding to the stated question has been drawn. Therefore, to tackle the problem, the present study tried to conduct a systematic review clarifying " the Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related ?

Method:

The present study is a systematic review investigating the level of nurses' knowledge and attitudes regarding the process of organ donation carried based on PRISMA's systematic review guideline(11, 12) .

In the first step of the study, the research question was developed and formulized. The research question contains the following statement: "Based on the obtained results from different studies, what are the Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related?"

After formulating the question and before beginning the study, any potential bias was prevented by selection of inclusion and exclusion criteria.

Inclusion criteria are as follows: data must be obtained from case studies, abstract or full text articles, Samples should work in Icu, the purpose of the study needs to be investigating nurses' awareness and attitude towards organ donation, articles are published in English language in iran or other country and research units need to be either undergraduate or graduate nurses. Exclusion criteria include review studies and a letter to editor . Excluding 22000 due to being repetitive in different sites, 500 articles due to the type of letter to the editor, 450 articles due to conducting on professions other than nursing, 15 articles due to their non-English language, 10 articles due to working on students of nursing, 4 articles due to qualitative studies (Figure 1).

Searching studies was carried through databases, web of knowledge, request, Medscape, medlineplus, ovidSID, Magiran, Pubmed, google scholar and Science Direct between 1990 and 2015 according to the topic and keywords including nurses, organ donation process, organ donation knowledge attitude, nurse or nurses -knowledge -nurses knowledge or nursing knowledge -attitude -nurses attitude or nursing attitude -organ donation or organ donation process - transplant or transplantation or organ transplantation or tissue transplantation- brain death) by AND and OR operators whether in the title or abstract, alone or in combinations. Moreover, searching continued in the references of the selected papers (Table 1).

Number of articles in different sites relevant to the subject includes 70000 in Google, 50000 in Goggle Scholars, 141 in pubmed, 905 in ScienceDirect, 1900 in Proquest, 39 in Medscape, 3 in medline plus, 2 in Ovid, and 10 in Magiran. 123000 articles were finally studied. Excluding 100000 due to irrelevant content.

The primary search targeted articles published in English from 1990-2015 on the subject of interest by keywords. In addition, the references of selected papers were searched.

The unpublished studies were searched through library of congresses and seminars available as well as the titles of research projects and those available in the university websites through scopus and irandoc. In addition, the registry of clinical trials of IRCT and cochrane were visited to run a relevant search.

Finally, information was collected in a form that was previously prepared by two members of the team. Studies with similar titles but varied subject matters were excluded

To evaluate each article, CRD's guidance criteria were used as a guide for completing data abstractions. Accordingly, two reviewers first examined the titles independently based on the abstract excluding the irrelevant studies. Studies were selected based on inclusion criteria. Then, the papers were independently examined and recorded by two reviewers. To determine the quality of the conducted studies, tools such as Consort Tool (RCT studies) and Oxford Tool (analytical, descriptive studies) were applied. Finally, 21 studies were selected and approved.

After selecting papers, data were extracted. Those items to be removed from papers were designed according to the survey questions before the start of the study in the data extraction form including author, title, purpose, location, time, type of study, number of samples and sample characteristics, and results. In any case of dispute between two reviewers, disagreement was resolved by a third reviewer.

Results:

We investigated 21 articles focusing on attitude and knowledge of ICU nurses towards organ donation and related factors. Different studies show different results; and generally, 5 studies declare that nurses have different attitudes and knowledge in different countries. Different factors influence their attitude and awareness elaborated based on the conducted review of the present study. (Table 2)

Studies reflecting enough information from nurses' side proved that factors such as experience of taking care of organ donation patient, education level, willingness, acceptance and participation in the process of organ donation, willingness toward explaining brain death to others, having contact with families losing their beloved ones, receiving specific training program about criteria for diagnosing brain death, positive attitudes of people toward the process of organ donation can be effective (13, 14) (15) (16) (17) (18).

In contrast, some studies proved that there is a lack of knowledge in this regard which may be influenced by lack of training programs about organ donation process, disability in diagnosing brain death criteria, cognitive chaos toward organ donation process and brain death (13) (9, 19) (20) (21) (22) (5).

In some studies, nurses have positive attitude towards organ donation. These studies were mostly conducted in countries such as Israel, India, America, Poland, Turkey, Hong Kong and Spain. Factors such as standard guidelines for diagnosing brain death in hospitals, guideline for ethical codes in hospitals, training programs for brain death process and organ donation, nurses' self-confidence in facing families losing their beloved ones and training programs, enhancing life quality of patients, lowering medical expenses and families' psychological pressures, experience of organ donation, individuals with higher education and married ones, religious beliefs, accepting brain death and organ donation process and personal willingness for organ donation are effective in creating positive attitudes toward organ donation process among nurses (1) (23) (24) (13) (25) (26) (27) (28) (15) (18).

Also, in some other studies, the effective factors in nurses' negative attitude towards organ donation are lack of training programs for determining brain death criteria and organ donation process, psychological factors (fear organs incision), patients' families' ideas, patients' pains, uncertainty about the issue that brain death may not be a real death, body

related factors, burring and autopsy, reluctance for being a part of organ donation process and accepting this as a part of nursing duties, unwillingness toward donating their own body or their family bodies, family's lack of consent for organs donation, contradictory ideas about organ donation and transplantation, having stress as a caring person, and interference of feelings once the donor is a close relative of ones(11) (12) (29) (20) (16) (21) (17) (22) (5) .

In addition, regarding the effect of training on people's attitude, studies show that in the first years of clinical nursing, those with positive attitudes believe that the existing protocol explaining and declaring brain death and making the families of organ donors aware of the process can empower positive attitude and enhance awareness. Most of nurses feel that they lack training and experience in supporting families losing their members (5).

Discussion

The present study investigates studies focusing on " the Level of Knowledge and Attitude of Nurses Working in ICU about Organ and factor related. Considering the critical role of ICU nurses in the process of organ donation (recognizing potential donors, supporting and approaching families losing a member), the level of nurses' attitude and knowledge has a high importance in the process of organ donation. Generally, nurses have positive attitude towards organ donation. (1) (23) (24) (13) (25) (26) (27) (28) (15) (18).

However, special training programs are necessary to determine the level of awareness. Enough knowledge can change nurses' attitudes improving their performance(۳۰) . The most important factor in changing attitudes and performances of nurses in the process of organ donation is training. Using standard guidelines or scheduled training programs in nursing universities or offering such courses can improve nurses' level of awareness, which

leads to a proper performance. Results show that nurses' positive attitude and knowledge can affect families' opinion conducting organ donation (8)(⁴) .

The important issue is that nurses may be involved with at least one element of organ donation process (recognizing potential donor, notifying transplantation coordinator) and the nurses' positive attitude has a considerable effect on notifying transplantation coordinator, supporting families losing a member and encouraging individuals toward participating in the process. Their positive attitude helps them feel less sad while explaining families the subject of organ donation of the lost member, and this positive attitude paves the way for acquiring consent by making connection with families (1) (2) .

In addition, some studies show that nurses working in internal wards or emergency centers are key actors in recognizing potential donors. However, they demonstrate negative attitudes in this regard (31). Additionally, it has been proved by some studies that inexperienced personnel have negative attitude towards their more experienced peers mostly due to the lack of exposure to brain death patients in nursing faculties. This is of high importance in the results of organ donation process (32) .

Studies declare that individuals' attitudes, beliefs and behaviors are influenced by cultural backgrounds, social norms and religious beliefs. For example, in South Korea and Turkey, people believe that corpus should be intact for burying; hence, they resist organ donation (9, 18).

It has been endorsed by some studies that organ donors consider training more important than caring. People's attitude heightens by increasing training level. Creating positive attitude in line with effective training is highly important, especially for those involved in caring stage of the process. Considering the importance of positive attitude in organ donation process, some studies accentuate that by clarifying the concept of brain death, this

positivism can be obtained, and since participation in the process may be an active decision related to people's attitude towards brain death, negative attitude can lower the participation(33) (34) .

At last, studies show that Awareness and knowledge are important factors but related to social norms and religious believes awareness, and this awareness should be applied to create positive attitude among those participating in the process of organ donation. Extensive clinical knowledge should be made on organ donation and communication skills among ICU nurses through training programs(35) . Sufficient knowledge makes it possible for nurses to face families losing a member with higher self-confidence, and awareness can change their attitude and ultimately their performance in the whole process.

One limitation of the present study was studies, which were only in English. Additionally, some studies were held via qualitative methods, which were excluded from the present study in spite of being reliable with some best evidence.

Conclusions:

To the best of our knowledge, this study is the first systematic review in Iran conducted to investigate ICU nurses' attitude and knowledge regarding the process of organ donation. Although many studies support the effective role of nurses in the process of organ transplantation, it seems that needs for further studies, training and declaring role of guidelines to perform such a critical role is still undeniable. Nurses are recognized as important and effective staff among medical team. However, they do not have enough knowledge and awareness while confronting organ donation process. This clarifies the necessity of conducting evidence-based activities in order to perform better and more accurate caring and ultimately contribute to the process of organ donation positively.

Implication for nursing and health policy:

Nurses' positive attitude and knowledge can affect families' opinion conducting organ donation. Given the high importance of nurses' awareness and attitude towards organ donation process in each country and based on the factors influencing this issue, it is suggested the some interventions regarding increasing nurses' awareness and attitude and its influence on organ donation process be separately carried out.

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Table 1: Key words consort

1- nurses knowledge or nursing knowledge and organ donation or organ donation process
2- nurses knowledge or nursing knowledge and brain death
3- nurses attitude or nursing attitude and organ donation or organ donation process
4- nurses attitude or nursing attitude and brain death

5- nurses knowledge or nursing knowledge and organ donation or organ donation process and transplant or transplantation or Organ Transplantation or Tissue Transplantation
6- nurses knowledge or nursing knowledge and organ donation or organ donation process and transplant or transplantation or Organ Transplantation or Tissue Transplantation and brain death
7- nurses attitude or nursing attitude and organ donation or organ donation process and transplant or transplantation or Organ Transplantation or Tissue Transplantation
8- nurses attitude or nursing attitude and organ donation or organ donation process and transplant or transplantation or Organ Transplantation or Tissue Transplantation and brain death
9- nurses knowledge or nursing knowledge and nurses attitude or nursing attitude and organ donation or organ donation process
10- nurses knowledge or nursing knowledge and nurses attitude or nursing attitude and organ donation or organ donation process and brain death
11- nurses knowledge or nursing knowledge and nurses attitude or nursing attitude and organ donation or organ donation process and Organ Transplantation or Tissue Transplantation
12- nurses knowledge or nursing knowledge and nurses attitude or nursing attitude and organ donation or organ donation process and Organ Transplantation or Tissue Transplantation and brain death

Figure1: Strategies for including and excluding articles

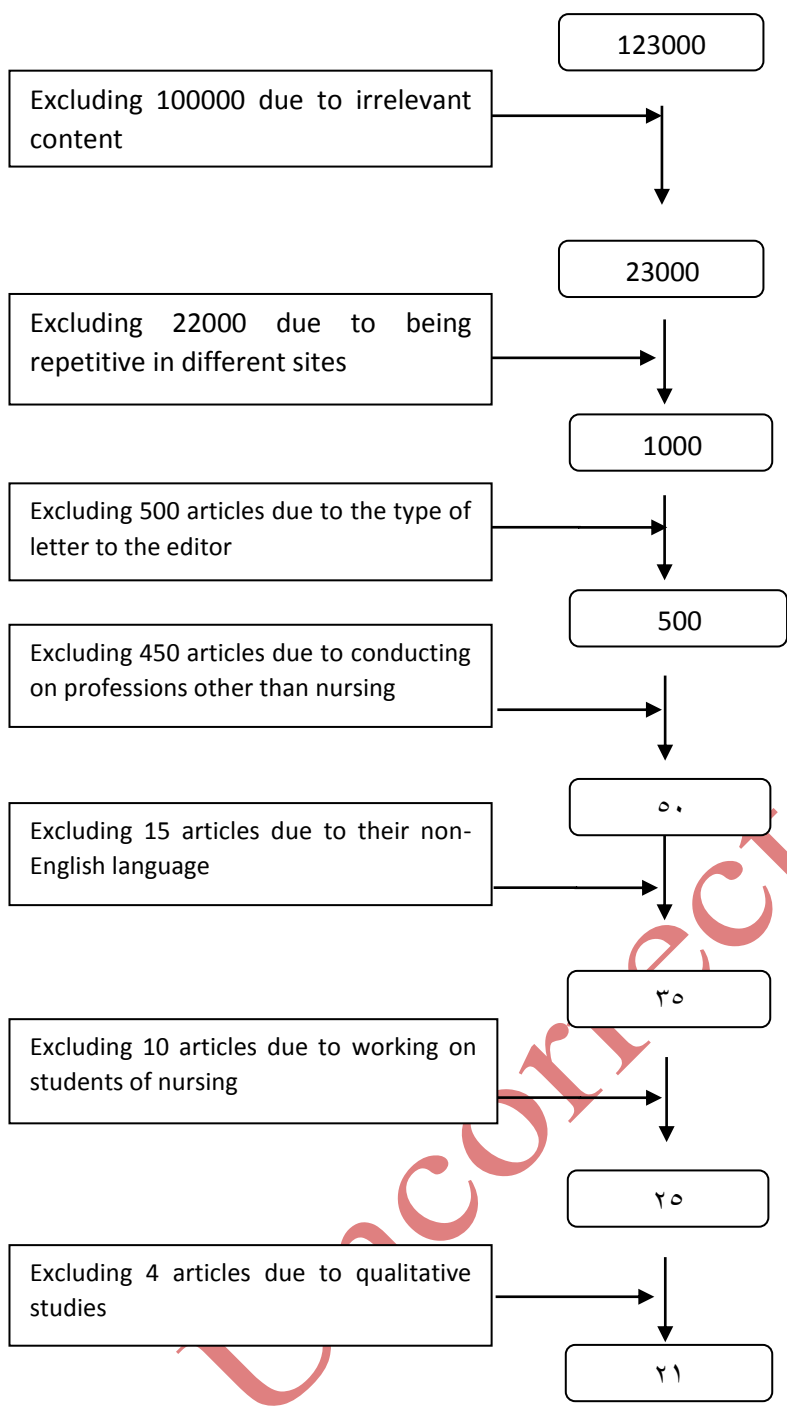


Table 2: Findings

Authors Year Place	objective	Type of study	Sample number/ patients' characteristics	methodology	results
Kennedy HB Farrand L 1996(America)	Investigating the relationship between emergency service nurses' attitudes and their concern about this question whether families are going to donate their members' body or not.	descriptive	233 emergency service nurses' attitudes at 17 hospitals	Questionnaires in investigating nurses' attitudes toward organ donation include 57 items such as demographic information and multiple questions, Likert scale and visual analogues which determine a nurse should approach families for	Results show that nurses have a positive attitude towards organ donation ($p < 0.05$), but they suffer from low self-confidence while asking questions about the process. There is a relationship between nurses' attitude and the number of asking question of families about donation, the nurses' self-confidence about the families' willingness for transplantation operation.

				donation.	
Rachmani R ۱۹۹۹ (Israel)	Evaluating knowledge and attitudes of medical staff toward brain death	descriptiv e	59 physician 93 nurses	Questionnaire with 24 items to evaluate knowledge of forensic issues, religious issues, mental pictures and procedure aspects in diagnosing brain death and evaluating attitudes towards brain death especially behavior codes and behavioral decisions	<p>The results show that the participants' awareness of brain death is low so that 80% of them answer to less than five items.</p> <p>Also, a significant relationship was noticed between knowledge and attitude of people ($p < 0.0001$).</p> <p>The results show that only 39% of people involve themselves in the process of diagnosing brain death.</p> <p>A significant relationship was observed between people's knowledge and behavior ($P < 0.0001$). People's attitude and</p>

					behavior also correlate with each other (P<0.004).
Al-MousawiM Abdul-RazzakM Samhan M 2001 (Kuwait)	Deterring medical staff's attitudes in all ICU departments in Kuwait	descriptive	28 Anesthesiologists, 51 nurses in 7 ICU departments	Developing two separate questionnaires, one for physicians and one for nurses including determining individuals' attitude toward organ donation and transplantation, people's idea about brain death and organ donation, people's role in requesting for organ donation	Twenty six nurses believe in brain death concept (51%) and 8 don't, 7 are in doubt and only 6 accentuate importance of organ donation. Also, 48 believe that nurse's involvement is necessary for success in organ donation. Five individuals believe that nurses should not affect families' decisions and 8 think that nurses should announce their own views to families. Only 14% are willing to persuade families for organ donation, and 67% of nurses are not willing to accept brain death and organ donation. Results of this study show that 49% of

					nurses are doubtful about organ donation and also 59% believe that their religion doesn't allow them to do so. Finally, the results prove that there is no positive attitude towards organ donation in Kuwait and they need training programs.
Ozdog N ۲۰۰۱ (Turkey)	Determining nurses knowledge, awareness and acceptance of tissue-organ donation	descriptiv e	474 nurses at 3 general hospitals and 2 midwifery hospitals	25 item questionnaire (5 demographic questions, 12 questions about knowledge, 4 questions about awareness and 4 questions about people's willingness toward organ donation)	Results show that 87.7 % of nurses have positive awareness toward organ donation and transplantation ($p < 0.05$) and only 10.8 % are aware of new rules and regulations. Also, 34.4 % are willing toward discussing and asking questions of families about organ donation. A significant relationship is noticed between individuals' awareness and education level with their willingness

					(p<0.05), acceptance (p, 0.001) and participation in the process of organ donation.
Ingram JE Buckner EB Rayburn AB ۲۰۰۲(America)	Evaluating Nurses' Attitudes and Knowledge Related to Organ Donation considering the situation of increasing opportunities for organ transplantation	descriptiv e	50 neurological ICU nurses of organ transplantation center 19 surgical ICU nurses of private hospitals	Standard 12 item questionnaire about people's attitude toward organ donation (ODAQ-II) and knowledge questionnaire	Results show that 96% of nurses have positive attitude toward organ donation process and 78.9 % have enough knowledge about the process.

<p>Boey KW 2002 (Hong Kong)</p>	<p>Determining attitude and commitment toward organ donation among a group of nurses in Hong Kong</p> <p>Determining attitudinal factors' relationship with nurses' commitment in organ donation.</p> <p>Determining the scope of demographic factors' effect of nurses on their attitude and commitment</p>	<p>descriptive</p>	<p>314 nurses of educational hospital (center of transplanting liver, kidney and bone marrow) in Hong Kong</p>	<p>Attitude toward organ donation measurement scale, questionnaire 46 item (ODAS) in 3 parts: ethical and humanitarian beliefs, fear from body dissolution, fear from medical ignorance and commitment scale toward organ donation with 6 items</p>	<p>Results show that 96% of nurses have positive attitudes toward ethical issues of organ donation and 24% fear from body dissolution and 15% worry about medical ignorance. Also, 16% state that they feel commitment for organ donation while only 9% owns organ donation card.</p>
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<p>Akgun HS Bilgin N Tokalak I ۲۰۰۳ (Turkey)</p>	<p>Evaluating knowledge and attitudes of medical staff toward deceased organ donation and organ transplantation in Turkey</p>	<p>Descriptiv e- sectional</p>	<p>1184 participants 59% nurses 41% physicians</p>	<p>A questionnaire with 26 questions including demographic information, awareness, attitude and belief of people toward organ donation and brain death</p>	<p>Results show that 81.1% are aware of brain death criteria and 58.9% lack awareness toward organ donation. Also, most of the participants carry negative attitudes toward organ donation and only 37.5 % are willing to donate their organs.</p>
<p>Kim JR Elliott D Hyde CH ۲۰۰۳(Korea)</p>	<p>Determining knowledge and attitude of medical staff toward brain death in Korea</p>	<p>Descriptiv e- explorator y</p>	<p>Nine individuals were chosen from 3 organ transplantatio n hospitals: Head of transplanting team,</p>	<p>Semi-constructed interviews</p>	<p>Results show that personnel's knowledge and information about organ donation is low, they have a negative attitude toward organ donation and they do not accept brain death as the real death.</p>

			<p>a surgeon,</p> <p>3</p> <p>coordinating</p> <p>nurses,</p> <p>2 head nurses</p> <p>, ICU</p> <p>authority,</p> <p>2 ICU nurses</p>		
<p>Reddy AVR</p> <p>Guleria S</p> <p>Khazanchi</p> <p>RK</p> <p>२००३ (India)</p>	<p>Determining</p> <p>knowledge and</p> <p>attitudes of patients,</p> <p>people, physicians and</p> <p>nurses about organ</p> <p>donation</p>	<p>descriptiv</p> <p>e</p>	<p>990</p> <p>individuals:</p> <p>300 patients</p> <p>376 citizens</p> <p>200</p> <p>physicians</p>	<p>Questionnaire includes 3</p> <p>parts: awareness toward</p> <p>organ donation, individual's</p> <p>willingness toward organ</p> <p>donation and attitudes</p> <p>toward organ</p> <p>transplantation procedures</p>	<p>Results show that more than 25% of nurses</p> <p>believe that organ donation process is not</p> <p>part of their profession and the majority of</p> <p>nurses (58.5%) cannot make decision for</p> <p>donating their relatives' organs.</p>

			97 nurses		
Bøgh L Madsen M ۲۰۰۵ (Denmark)	The objective of the study is evaluating knowledge and, attitude and skills of medical care staff toward organ donation in different departments of organ transplantation hospital and the possibility of recognizing issues for further advancement	Cross-sectional survey	1168 medical staff: 689 persons, 110 physicians, 512 nurses, and 61 practical nurse	Questionnaire containing questions about awareness, attitude and performance in organ donation process, mostly closed answer questions and few open answer ones	Results show that in the area of attitude, 82 % of participants endorse organ donation. In addition, 94% of participants are willing to donate their organs after their death and finally, 81% of the nurses have positive attitudes toward organ donation. Regarding awareness, 54% are enough aware about brain death to explain it to others and 42% have enough knowledge for making contact with families lost their dears. In addition, the results show that medical care personnel need more training programs especially about ways of informing families about brain death, supporting them and recognizing potential

					donors.
Conesa C Ríos A Ramírez R Sánchez J Sánchez E 2005 (New York)	Determining primary care medical staff's attitude toward organ donation and determining effective factors	descriptiv e	139 nurses from 32 medical care centers	Nurses' attitudes through questionnaires including psychological factors, demographic information, awareness toward organ donation, people's opinion about body, corpus manipulation and organ donation	Results show that 93% of nurses have positive attitudes towards kidney donation. No significant relationship is discovered between nurses' attitudes and a certain organ for transplantation (p=0.209). Also, no significant relationship was noticed between nurses' attitudes and organ donation from dead body. (P=0.712)
Kim JR Fisher MJ Elliott D 2006 (Korea)	Developing a reliable scale for determining nurses' attitudes working in ICU about brain death and organ transplantation in	sectional	520 nurses in Neurosurgica l Department	38 item questionnaire based on Likert scale, demographic information including age, gender, marital status and nursing experiences	Results show that 89% of individuals do not have any training for the organ donation process. In spite of divergent feelings, Korean nurses follow positive attitude toward organ donation process. Only 32% take

	Korea				part in organ donation process and 27% have the experience of taking care of a brain death patient.
Cohen J Ami SB Ashkenazi T Singer P 2008 (Israel)	Investigating medical care personnel's attitude toward brain death and its relationship with the difficulty level of the organ donation process	descriptive	2366 individuals (1737 nurses and 629 physicians) (ICU, Neurosurgery, Cardiology, Pediatrics, Anesthesia and Internal section)	Answering demographic questionnaire (age, gender, level of education, hospital department and individual's attitudes towards brain death by asking the question that whether brain death determines death? (as a yes/ no question) task level of difficulty was measured by performing duties such as coordinating organ donation from a	Results show that 78.2% of nurses have positive attitudes toward brain death ($p < 0.001$). ICU nurses have a more positive attitude towards brain death than their peers in emergency or internal department ($p < 0.001$). Among those carrying positive attitudes, a significant relationship has been recognized among the necessity of following guidelines for declaring brain death, confronting organ donation process in the hospital and receiving training for brain death ($p < 0.001$)

				<p>potential donor, describing transplantation process, highlighting importance of donation, supporting families , financially or spiritually</p> <p>(As yes / no questions)</p>	
<p>Ríos A Martínez- Alarcón A Ayala MA Sebastián MJ Abdo-Cuza A Alán J López-Navas</p>	<p>Determining attitudes toward deceased organ donation in different hospitals of Latin America, Spain and evaluating effective factors</p>		<p>1194 nurses at 12 hospitals and 32 first aid medical care centers in 4 countries: Spain 650,</p>	<p>Reliable questionnaire about psychosocial aspects of organ donation</p> <p>Demographic factors (age, gender, marital status and country)</p> <p>Information about the profession, medical care center, questions about</p>	<p>Results show that 77% of nurses have positive attitude toward brain death and organ donation.</p>

<p>A López-López A 2010 (New York)</p>			<p>Mexico 428, and Cuba 89 Costa Rica 27</p>	<p>knowledge and attitude toward organ donation process personal experience about brain death, belief in future needs for organ donation from oneself, attitudes toward donating kidney and liver, awareness toward brain death hypothesis and question about people's attitude toward body</p>	
<p>Melo J Batista A Teixeira A Figueiredo E</p>	<p>Evaluating knowledge and behavior of nurses and physicians working in 9 hospitals</p>	<p>prospective</p>	<p>495 nurses and physicians in emergency</p>	<p>Transplantation questionnaire containing 3 variables: demographic, social and professional.</p>	<p>Results of this study show that 78% of nurses declare that they passed training courses for organ donation and 67% believe that they need more training</p>

Ribeiro O Lopes P 2011 (Portugal)	in Portugal about organ donation from dead bodies or organ transplantation		service department and ICU at 9 hospitals	Research units include 9 questions, the second section contains general questions about organ donation process and transplantation including 12 questions and the third section with 20 specific questions about knowledge and awareness about organ donation process.	programs. One of the most important reasons for organ donation decrease can be disability in recognizing brain death and lack of necessary human resources. Results also show that there is relationship between lack of awareness toward organ donation, the whole process and brain death criteria among medical staff.
Jeon KO Kim BN Kim KS Byeon NI Hong JJ Bae SH	Determining knowledge, awareness and attitudes in relation to brain death and organ donation among medical staff in	Descriptiv e-sectional	109 nurses and 61 physicians at 5 hospitals	Questionnaire containing 41 questions about knowledge and 27 questions about attitude	Results show that there is a relationship between the level of personnel training and their knowledge about organ donation. Also, there is a significant relationship between knowledge and attitude of

SonSY 2012 (Korea)	Korea				<p>personnel on brain death and organ donation ($p<0.001$).</p> <p>A positive correlation is noticed between positive attitude toward organ donation and knowledge about the donation process ($p<0.001$).</p> <p>About 94.2% know that there is a difference between having plan-like life and death brain ($p=0.002$). From one side, 46.5% have the experience of taking care of a brain death patient and they don't know these patients can be alive for month and years $P= 0.037$.</p> <p>Regarding attitude, 74.1 % believe that organ donation cannot be suggested to families and 83.5% are willing to</p>
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introduce families to organ donation hospitals.

Demographic factors (age, Gender, education level, profession and marital status) can affect people's idea and attitude toward brain death.

Married, male, higher age and educated individuals have more positive attitudes ($p < 0.001$).

Considering the importance of donation among 91.2 % of individuals, in believing that brain death can be a chance for organ donation, 83.5% have positive attitudes. On the other side, there is a negative attitude toward talking to families about organ donation (27.6%), attracting

					families' consent for donation (27.1%) and registering for donation (12.4%).
Makara-Studz ińska AM Kowalska A Wdowiak A Kryś-Noszczy k K ۲۰۱۳ (Poland)	Determining knowledge and belief of medical staff toward brain death in Poland	prospectiv e	100 nurses working in Maternity Ward of Orthopedic Clinic Department of Anesthesiolo gy Surgery department	A two part questionnaire containing questions about knowledge and attitudes of nurses toward organ donation and a question about variables such as age, gender, education level and place of profession	Results show that the majority of individuals endorse organ transplanta tion, but they have little knowledge about how they can be effective in the continuation of the donation process. Also, 72% of nurses do not know which kinds of brain death in the organs is recoverable.
Azmandian J, Poorhoseini	Investigating the effect of education, nurses'	Semi- experimen	120 emergency	Research-made questionnaire	Knowledge and attitude of nurses about organ donation and brain death increased

S, Shokouhi M, Mirzaei MR ۲۰۱۳ (Iran)	knowledge and attitudes in organ donation	tal	unit and ICU nurses of Kerman hospital		following the training program. P<0.001)
Lin. LM Lin CC Chen CL Lin CC ۲۰۱۴(Taiwan)	Determining effects of an education program based on behavior theory on nurses' attitudes and behavioral intentions to advocate deceased donor organ donation	Interventi onal	123 individuals Working at least for 3 months in ICU, general surgery, Neurosurgery or Neurology)	Control group was provided with training booklet containing information about the necessity of organ donation, brain death process, organ donation process, forensic issues and experiences about receiving organs and donor families. Intervention group: in addition to training booklet, a training program based on	Training program (TPB) significantly changed attitudes and behavioral attentions of nurses toward organ donation process (p <0.0)

				behavioral theory was held. A training program including film about organ donation advancement	
MichaelAI AdemolaSA Olawoye OA IyunAO Oluwatosin OM ۲۰۱۴ (Nigeria)	Determining physicians and nurses' awareness and attitudes in an educational hospital toward skin donation and transplantation bank and recognizing training and educational needs of individuals	Descriptiv e sectional	80 physician 81 nurses	44 item questionnaire about attitude, with Likert scale containing 3 parts: demographic and social information, a combination of multiple choice questions and open answer questions about physicians and nurses' attitudes toward skin donation and organ donation bank	Results show that 96.9% of the participants were aware of organ donation process. In 67.7% of them, their information was based on special training and 49% of individuals had positive attitudes toward organ donation. In contrast, 55.9% were not willing to participate in the discussion about skin transplantation and 20.5% mentioned that undesirable deformity is their main reason for being against skin transplantation.
Lomero MM	Determining attitude	Descriptiv		36 item questionnaire with 3	Results show that 74.4 % of physicians

<p>Rasero MJ Fuentes L Jaume M ۲۰۱۵ (Spain)</p>	<p>and knowledge regarding organ donation process and transplantation among physicians and nurses in a hospital in Barcelona.</p>	<p>e-sectional</p>		<p>parts : questions for knowledge and attitude toward organ donation and demographic and professional information</p>	<p>and 69% of nurses look positive towards organ donation. Also, 62.2% of physicians and 32.4 % of nurses disagree that brain death could be recognized by diagnostic tests (p, 0.0001). Regarding reversibility of a brain death individual, 91.1% of physicians and 77.8% of nurses disagree. P= 0.003</p>
<p>Manzari Z Masoumian Hoseini ST Khaleghi I ۲۰۱۵ (Iran)</p>	<p>Evaluating nurses' knowledge, attitude, and practice toward their role in the organ donation process from brain-dead patients and factors influencing it in Iran</p>	<p>Descriptiv e-sectional</p>	<p>90 ICU nurses of Imam Reza and Qaem hospitals</p>	<p>Questionnaire including demographic information, evaluating knowledge, attitude and performance of a nurse in the process of organ donation from brain-dead patients and influencing factors</p>	<p>Nurses do not have enough knowledge, attitude and performance about the process of organ donation. 80% of nurses have mediocre knowledge about organ donation and 97% have weak performance.</p>

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