

Knowledge and Attitudes Regarding Brain Death and Organ Donation among Young Males in the Northeastern Thailand: Cross-Sectional Survey

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Objective: To determine public perception of brain death and organ donation from participants of the northeast region of Thailand, answered questionnaires from audiences of the organ donation exhibition were reviewed to assess knowledge and attitude.

Materials and Methods: These exhibitions were arranged in 15 places in three provinces between July 1 and December 31, 2012 by the Organ Transplantation Unit, Faculty of Medicine, Khon Kaen University. Audiences were asked to fill out the questionnaire before they were educated about organ donation from well-trained officers.

Results: Seven hundred seventy-five subjects undertook the survey. Most were male (99.4%) and most (99.2%) were aged between 19 and 30 years old. Importantly, 54.3% did not feel that brain death truly defined death while 36.3% thought that brain death patients could recover. The other interesting point is 29.2% noted that donated organs might be sold. Only 14.8% believed that organ donation could cause disability in the next life and 65.9% did not agree or did not know that organ donation is justified in religious concept.

Conclusion: The significant barrier to organ donation are deficiency in knowledge about brain death, organ donation, and transplantation as well as underrated social reliance on process regulation. These information contrast with previous studies in Thais.

Keywords: Deceased organ donation, Organ donation in Thailand, Brain death knowledge, Attitude towards organ donation

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Organ transplantation is the most cost-effective renal replacement therapy because it has given a better quality of life and longevity than chronic dialysis⁽¹⁾. However, donated organs are in shortage while the waiting lists of patients keep growing⁽²⁾. In 2014, organ transplantation reached around 10% of worldwide requirement⁽³⁾. Asia has the lowest rate of organ transplantation while having the highest growth rate of end-stage organ failure⁽³⁾. Compared with its neighbor in South East Asia, Thailand is the only country that keeps rising in organ donation rates in recent year⁽⁴⁾.

However, the organ donation rate in Thailand is still remarkably low with only 2.9 deceased donors per million populations in 2014, even though improved from 1.7 deceased donors per million populations in 2012⁽⁵⁾.

The Organ Transplantation Unit (OTU) from the Faculty of Medicine, Khon Kaen University (KKU) has contributed to organ donation campaign in Thailand by setting up temporary exhibitions around bureaucratic and public places in the northeastern region to provide knowledge and recruit organ donation card holders from people willing to donate. It has been set to expand scientific-based education in harmony with religious and traditional belief since 1997. There are changes in the social structure and social values of Thai society during the rapid industrialization of this past decade. Organ donation promotion should be modified based on the public knowledge. In literature, a crucial factor causing the shortage of organ donor in Thailand, and

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many countries, is next of kin declining to donate⁽⁶⁻⁸⁾. Previous surveys stated that many Thais want to keep their relative's bodies intact to ensure organ completion when they are reborn^(6,7).

The research to determine public perception of brain death rules and organ donation from this region is very limited^(6,7). There is a lack of information to ascertain the donation perspectives in the multiple provincial areas of the country where the donation rate is high⁽⁵⁾. A questionnaire was designed to explore the people's belief regarding brain death diagnosis as well as organ donation to improve campaign strategy.

Materials and Methods

A cross-sectional survey was undertaken in the exhibitions for promoting organ donation. The exhibitions were displayed with various materials such as banners, posters, and brochures. The same set was used for every site. This exhibition was arranged in 15 sites in three of 19 provinces in northeastern Thailand (Khon Kaen, Udon Thani, and Roi Et) between July 1 and December 31, 2012, by the OTU, Faculty of Medicine, KKU. The provinces were selected because of their vicinity of areas of the KKU campus, which offered convenient travel with a limited budget.

The exhibition sites were selected based on accessibility permission from bureaucratic administrations or community events committees at that moment. The participants were randomly available people in the bureaucratic areas and public events who were attracted to the exhibitions and willing to answer the questionnaire. All ages and nations were welcome for the exhibitions, but only Thais were accepted for the questionnaire. Individuals attending the exhibitions were asked to undertake a questionnaire before they would receive information about organ donation and brain death policy from well-trained officers. Once done, then they could decide whether they were willing to apply for a donor card or not.

Three officers from the OTU, KKU had been trained for the questionnaire clarification in case participants required help in defining the meaning of those questions. The same officers joined all exhibition sites.

The questionnaire in the Thai language had been created, adjusted, and improved after trial using the same questionnaire in 2011. There was no participants name, surname, or specific information on the pages that can identify participants. It had the demographic part and 19 questions part covering perception and knowledge regarding brain death and organ donation

Table 1. Demographic data

	Number (%)
Total subjects	775 (100)
Sex	
Male	770 (99.4)
Age range (years)	
19 to 30	769 (99.2)
31 to 45	4 (0.5)
46 to 59	2 (0.3)
Education	
Lower than master degree	733 (94.6)
Master degree	41 (5.3)
Higher than master degree	1 (0.1)
Occupation	
Student	7 (0.9)
Business owner/private	27 (3.5)
Private business employees	47 (6.1)
Bureaucrats/government employee	615 (79.3)
Others	79 (10.2)
Marital status	
Single	690 (89.0)
Married	75 (9.7)
Divorced/separated	3 (0.4)
Others	7 (0.9)

with required "yes", "no" and "unknown" answers. A percentage was used for descriptive analysis. The present study was approved by the KKU Ethics Committee in human research. The manuscript is written as described in The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement guideline for cross-sectional study.

Results

Seven hundred seventy-five subjects undertook the survey with a zero-discard rate because all the papers were returned. The present study was done by pre-educated survey questionnaires in the organ donation exhibitions with young, single males (99.4% were male, 89% were single, and 99.2% were aged between 19 and 30 years old) (Table 1). Most had lower than master's degree education level (94.6%) and worked for the government (79.3%) in northeastern Thailand (Table 1). For baseline experience about organ donation and transplantation, more than half of participants had never known about organ donation or transplantation (53.8%), and only a few had a donor card (2.5%) (Figure 1).

Of those surveyed regarding questions about

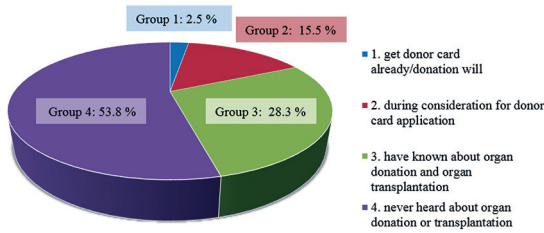


Figure 1. Experience regarding organ donation of participants.

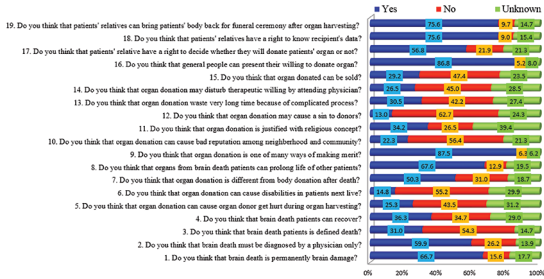


Figure 2. Nineteen questions in the questionnaire.

brain death, nearly two-thirds thought that brain death indicated permanent damage (66.7%) and must be diagnosed by a physician only (59.9%) (Figure 2). Notwithstanding, more than half of participants did not feel that brain death genuinely determined death (54.3%). One-third reflected that brain death patients could recover (36.3%) and one-fourth thought that organ harvesting could cause pain in brain death donors (25.3%).

Looking at the objective, benefit, and social risk of organ donation, most of the questions except the issue regarding religious revealed a positive attitude. To begin with, half of them knew that organ donation is different from body donation for academic purpose (50.3%) (Figure 2). Less than 15% of participants believed that organ donation might result in disabilities in donors' next life. In addition, most participants considered organ donation as merit making (87.5%) and accepted that donated organs helped other patients prolong their lives (67.6%). Around two-thirds of subjects did not agree that organ donation will create a bad reputation in society or cause sin to donors (56.4% and 62.7%). However, only one-third believed that religious giving was a reason for organ donation (34.2%), whereas more participants stated unknown or disagree (65.9%).

Just above 40% of participants showed an optimistic point of view related to organ donation process effectiveness and transparency. Nevertheless,

around one third of them were concerned that organ donation can be time-consuming (30.5%), the donated organ could be sold (29.2%), or believed that the attending physician might decline to treat patients if they became brain death donors (26.5%) (Figure 2).

The questions about patients and relatives' rights showed that most participants knew their rights about their organs donation (86.8%). They also knew that the families could bring the donors' body back after the organs were removed (75.6%), and the donors' relatives could know the recipients' information (75.6%). On the other hand, more than 40% did not think (21.9%) or did not know (21.3%) that relatives have a right to donate donors' organs.

Discussion

The target audiences in the organ donation exhibitions were around provinces that have a high deceased donation rate⁽⁵⁾ assessed from the questionnaire. The present study found two key issues that required attention. The first issue is the misconception in brain death donor rule and lack of knowledge about organ donation and transplantation. The other key issue is the public confidence in good governance in the organ donation process. Surprisingly, the present study has shown that the belief that organ donation results in disabilities in the next life is no longer the dominant barrier to organ donation. The positive perceptions are also presented concerning the advantages of donated organs.

The misunderstanding of brain death was pervasive. Though nearly two-thirds thought that brain death indicated permanent damage and must be diagnosed by a physician only. More than half did not feel that brain death was truly defined death and 15% admitted not knowing. In addition, more than one-third thought that brain death patients could recover and one-fourth thought that organ harvesting could hurt brain death donors. Furthermore, lacking knowledge regarding organ donation and transplantation was a common circumstance. This is evident in that half of the participants did not know the difference between organ donation and body donation for academic purposes, and more than half had never before heard about organ donation or transplantation.

The limited knowledge of brain death is not far from previous surveys in other nations that have strong support for procuring organs from brain-dead patients such as in the United States⁽⁹⁾. For example, one survey was shown that only half (46%) knew brain death was a legally acceptable criterion for determining death⁽⁹⁾. Evidence revealed in many parts

of the world, that either the public or some medical personnel, inadequately recognized the legal and medical status of brain death⁽⁹⁻¹²⁾. These results from young participants might result in organ donation refusal in the future, which is supported by evidence of a possible link between lack of understanding about brain death and a refusal of donation^(7,13). From the interview study, the potential donors' families that refused to donate organs of deceased donors indicated that the main reason for denial is the rejection of brain death criteria⁽¹³⁾. The brain death criteria have been controversial⁽¹⁴⁾. Attitudes toward the dead donor rule are vital predictors of willingness to donate organs under controversial standards. Thus, the policymaker should stimulate discussion around stakeholders considering putting this content as part of a routine program for students because children and young adults are noted to be free from bias and quickly learn new concepts⁽¹⁴⁾.

Risk of losing public confidence in the organ donation system is the next potential hurdle. Participants have shown their concern that organ donation has negatively influenced physicians' treatment willingness (Figure 2). Organ donation is an altruistic process that counts on public trust in the medical profession and equitable organ allocation system. Recent evidence clearly showed that when public confidence in the country's organ transplantation system collapses, deceased organ donation rates fell⁽¹⁵⁾. The critical issue we should focus on is public concern that organ trade can raise negative attitudes toward organ donation. Organ trafficking cases reported in media were easily rampant and had posed a risk to destroying social trust in medical institutions⁽¹⁶⁾. Recently, kidney trafficking cases from Cambodia men to hospitals in Bangkok required attention and re-evaluation from the Organ Donation Center⁽¹⁷⁾, the Medical Council of Thailand, Thailand Transplantation Society and allied transplant centers, and then led to newer regulation to control organ transplant program for foreigners in Thailand⁽¹⁸⁾. If media can be used widely to promote strong legislation and transparent processing in organ donation to the public, social trust and awareness can be increased. Thus, the campaign strategies should focus on providing more scientific knowledge about brain death, and legislation control during the organ donation process to show its transparency.

Conversely, there were positive attitudes in the present study. Concerning the belief that organ donation would result in anomalies at rebirth, only a minority agreed to this idea. Moreover, the positive

attitudes toward organ donation have shown that organ donation is seen as making merit and benefit other people's longevity even without knowing them. It supports the idea from the religious concept in the more significant part of participants.

The present study reflects a different priority of significant barriers of deceased organ donation from the previous survey of the Organ Donation Center in 2004⁽⁷⁾. That investigation revealed that one-third of 5,800 interviewees from around the country did not want to donate their organs when they die, and the primary reason was fearing of anomalies in the next life. Whereas, this idea was found at less than 15% in the present study. The rationale possibly comes from selection bias of participants' character, which were confined in particularly young ages of the northeastern region. It conveys a view of the young generation that adheres less to religious concepts⁽¹⁹⁾ and have less bond in the belief of rebirth. Remarkably, two-thirds of participants did not agree or did not know that organ donation is supported by religious concept while the highest positive answer in the questionnaire agreed that organ donation is one kind of making merit (87.5%). These answers indirectly showed that merit making is not always adhered to religious belief in participants' idea and most of them did not believe that organ donation will create a sin or evil reputation in society against donors.

Nearly one-third of participants accepted "unknown" for the question about post-mortem belief and religious (Figure 2, question No.6 and No.11). It opens an opportunity for our exhibition teams to include more specific kinds of knowledge to maximize a favorable understanding. Religious and cultural differences contribute to the context of organ donation in related to the solidarity of body and soul⁽²⁰⁾. They might play roles not only as obstacles^(21,22), but also favorable factors⁽²³⁾ depending on which side of the arguments are exploited by societies' preferences⁽²⁰⁾. The OTU, KKU can fill this gap by inviting religious leaders, using the quotes from respected priests or associated materials to support knowledge of theological concepts and organ donation^(24,25).

Other minor factors that lead to negative attitudes toward organ donation are the opinion that organ donation is a time-consuming process and uncertainty in the role of families in the donation consent. It has been shown that around one-third of participants thought that the process of organ donation inevitably wastes their time in hospitals. The OTU, KKU ought to prepare simplified materials to describe the organ donation process and clarify its workflow to reduce

opposed ideas. The right of deciding to donate organs of themselves and their relatives is a fundamental legal knowledge about which the public needs to be informed. Though most of the participants knew of their right to make a decision whether to donate their organs or their relatives' organs. Still, more than 40% of the respondents were not aware that they have a role in deciding to donate organs of brain death's relatives.

The present study is the most extensive survey regarding brain death and organ donation in the northeastern participants. Nonetheless, there are many limitations and biases from the retrospective nature and limited-resource environment. The study certainly has selection bias of participants, which was narrowed to government officers in KKU's vicinity provinces because of an insufficient number of organ-transplant-coordinators and budgets to widen the coverage of the exhibition areas. The demographics (Table 1) showed that nearly all were young male working in the northeastern region, which corresponded with the common character of deceased organ donors allocated to the OTU, KKU of which the greater part was male donor from the northeast. In national level, from the annual report of the Organ Donation Center, more than half of deceased donors came from this region and traffic accidents were the leading cause of brain death in the young⁽⁵⁾. If brain death and organ donation knowledge can be provided in this target audience group such as a mandatory adult classes in driver license certification, it can be diffused by Thais society and blend with local citizens' norm eventually. Though the results are difficult to represent Thailand, they represent the knowledge levels for the northeastern people. The current study add-on information can help the OTU, KKU gain more insight to target participants and alert the national policymakers on how to improve its campaign strategy. Public education should emphasize on providing knowledge of brain death conditions scientifically instead of showing only benefits of donated organs, which are already known. The understanding of brain death status lessens grief and removes guilt when relatives consider donating the loved one's organs⁽⁹⁾. The actual process of brain death declaration, donation, and organ harvesting, which undergo strong regulation, should be simplified, and presented publicly to gain public trust.

Conclusion

The present study highlights an inadequate knowledge of brain death and essentially neither negative or positive attitudes toward organ donation. The significant barrier to organ donation is insufficient

knowledge regarding brain death donor rules, organ donation, and transplantation. They differ from the previous study in which the negative belief regarding the impact of donation on the next life was the most prominent idea. Social concerns about organ trading might be the next hurdle that halts public trustworthiness in the organ donation process. Solving strategies require public education and monitoring for transparency practices to prevent either real incidence or suspicion of organ commerce. Further national education is necessary to improve the understanding of organ donation and assist in increasing donor rates from brain death donors. Support from religious leaders might help to remove uncertainty in religious beliefs related to organ donation.

What is already known on this topic?

The most critical factor causing the shortage of organ donor in Thailand and many countries was next of kin declining to donate. The primary reason was fearing of anomalies in the next life.

What this study adds?

The present study found two major issues including misconception in brain death donor rule and lack of knowledge about organ donation as well as underrated public confidence in good governance in the organ donation process. In contrast, the belief of organ donation resulting in disabilities in the next life is no longer the dominant barrier to organ donation.

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Conflicts of interest

The authors declare no conflict of interest.

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