

Exploring the experiences and perspectives of emergency physicians on brain death organ tissue donation after the Life-Sustaining Treatment Decision Act

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Background: This study explored emergency physicians' experiences and perspectives related to brain death organ tissue donation (OTD) after the enforcement of the Life-Sustaining Treatment (LST) Decision Act in Korea.

Methods: Using the Braun and Clarke thematic analysis method, this qualitative study analyzed interview data—comprising experiences and perspectives of brain death OTD since the LST Decision Act—of 10 emergency physicians who specialized in targeted temperature management (TTM) and cared for post-cardiac arrest patients.

Results: Data analysis revealed 13 subthemes and 5 themes: the LST Decision Act is easier to explain to family members than brain death OTD, but it does not fit well in an emergency medical setting; many family members decide to stop LST even before physicians mention brain death or OTD; family members view stopping LST as being about comforting patients without bothering them, and decision-makers are therefore no longer willing to choose OTD; stopping LST does not always result in brain death, but cases of brain death are preceded by stopping LST; and since the LST Decision Act, the number of TTM cases and potential brain death donors has decreased.

Conclusions: Unless a supplementary policy that connects stopping LST to brain death OTD is prepared, the withdrawal of LST in patients resuscitated after cardiac arrest is expected to continue, and brain death OTD is expected to decrease.

Keywords: Life-sustaining treatment; Organ donation; Tissue and organ procurement; Emergency physician

HIGHLIGHTS

- Participants perceived the Life-Sustaining Treatment (LST) Decision Act as easier to explain than brain death organ tissue donation.
- Participants said that family members decided to stop LST first, faster, and more proactively than expected.
- Participants stated that family members viewed stopping LST as being about comforting patients.
- Participants said that there were cases of stopping LST before brain death.
- Participants perceived that the number of brain death donors had decreased since the LST Decision Act.

INTRODUCTION

The Act on Decisions on Life-Sustaining Treatment (LST) for Patients in Hospice and Palliative Care or at the End-of-life (hereinafter referred to as the LST Decision Act) was enacted in Korea in February 2018 [1]. After the enforcement of the LST Decision Act, the total number of notifications and brain death organ tissue donations (OTDs) began to decrease [2,3]. According to the Korean Organ Donation Agency (KODA) annual report, the number of brain-dead organ donors rose steadily until 2016, when the number reached 573 (11.28 per million population), after which it declined to 515 (10.01) in 2017 and dropped sharply to 449 (8.70) in 2018 [4].

Although the overall number of OTDs decreased, the number of notifications by emergency physicians increased from 49 in 2015 to 144 in 2019 [4]. Emergency physicians play a central role in treating survivors of cardiac arrest due to sudden cardiac death, intoxication, major trauma, or hanging. Since the introduction of targeted temperature management (TTM), the role of emergency physicians has become more critical in this field [5]. However, some patients have poor conditions such as a persistent vegetative state or brain death despite the best efforts of the medical team. In this process, emergency physicians prioritize influencing the organ donation rate because of their role in identifying and notifying patients with suspected brain death.

Studies have addressed emergency physicians' attitudes and perspectives on brain death OTD and the decision to withhold and withdraw LST [6,7]. However, to the best of our knowledge, no study has explored the

experiences and perspectives of brain death OTD among emergency physicians in Korea. Therefore, we sought to explore emergency physicians' experiences and perspectives related to brain death OTD after the LST Decision Act was implemented. The results of this study could be used to connect LST decision-making with brain death OTD.

METHODS

Study Design

This qualitative study analyzed interview data from emergency physicians regarding their experiences and perspectives on brain death OTD since the LST Decision Act using the thematic analysis method. The study was approved by the Ethics Committee of Yonsei University Wonju College of Medicine (IRB No. CR320150). Informed consent was obtained by the all participants.

Selection of Participants and Recruitment

The inclusion criteria were board-registered emergency physicians in the Korean Society of Emergency Medicine who treated post-cardiac arrest patients with TTM. Purposive sampling was performed to select and recruit participants. Not many emergency physicians specialize in TTM and care for only post-cardiac arrest patients in the intensive care unit (ICU). Thus, only a small number of emergency physicians encounter the issue of brain death OTD as part of their work in the emergency department (ED) at a university hospital. We received regional-level recommendations for specialists in critical care and resuscitation to prevent selection bias. We individually mailed the recommended physicians with information on the purpose, method, interview questions, and confidentiality of the study, through which we confirmed their consent to participate in the study.

Unlike quantitative research, the sample size in a qualitative study is unpredictable and is not determined in advance; this is because the purpose of qualitative research is not to make generalizations about the study participants. Instead, qualitative studies aim to explore the experiences or perspectives of minority groups. Thus, in qualitative research, the sample size (the number of study participants) is determined during the analysis. Researchers interview the study participants sequentially and stop conducting interviews when new perspectives or experiences no longer appear in the data; this point is referred to

as data saturation [8].

Data Collection

The interviews were conducted between December 2020 and January 2021, following strict social distancing regulations to prevent the spread of coronavirus disease 2019 (COVID-19). Face-to-face interviews were discouraged. Thus, online interviews were conducted using Zoom (<https://zoom.us/>; Zoom Video Communications, San Jose, CA, USA).

Two researchers (SYP and KHP) conducted the interviews using Zoom. The interviews took an average of 1 hour and were recorded in real-time. Immediately after the interview, a third member of the research team who was not involved in conducting the interviews transcribed the recorded file verbatim.

Data Analysis

We analyzed the data using the thematic analysis method proposed by Braun and Clarke [9]. This method of identifying, analyzing, and reporting patterns (themes) within data is conducted in six steps: phase 1, familiarizing oneself with data; phase 2, generating initial codes; phase 3, searching for themes; phase 4, reviewing themes; phase 5, defining and naming themes; and phase 6, producing the report. Following this process, two researchers (SYP and KHP) generated the initial codes, combined the codes, and excluded duplicates in the process. The two researchers reviewed and revised the themes several times and subsequently defined and named them.

Rigor

The following methods were used to minimize bias and increase accuracy in this study. First, we made efforts to receive recommendations for participants from various regions to the extent possible, since although Korea is a small country, there are distinct cultural differences between regions. Second, we verified that the participants' interview results were accurately transcribed and described, reflecting their intentions. After the interviews were transcribed and the themes were derived, they were sent to the participants by e-mail for verification. Finally, although the two leading researchers generated the codes, the other researchers reviewed the results. They presented a wealth of opinions, and the data collection and analysis processes were all described in the researchers' notes to ensure accuracy and transferability in the research.

RESULTS

Data saturation began with the eighth interviewee. After the 10th interview was conducted, we concluded that sufficient saturation had been reached, and the recruitment of participants was stopped. The characteristics of the study participants are listed in Table 1.

Themes of the Study

The study revealed 13 subthemes and 5 themes (Table 2).

Table 1. General characteristics of the participants (n=10)

Participant	Sex	Age (yr)	Region	Work duration as EM physician (yr)	Experience of brain death organ tissue donation (case)	Subspecialty
A	Man	46	Wonju	16	>100	Critical care medicine
B	Man	44	Changwon	12	>30	Critical care medicine
C	Woman	52	Bucheon	22	5	Pediatric EM/resuscitation
D	Man	49	Yangsan	18	5	Critical care medicine
E	Man	40	Gwangju	6	10	Critical care medicine
F	Woman	42	Seoul	9	5	Critical care medicine
G	Man	49	Seoul	15	>100	Resuscitation/EMS
H	Man	42	Daegu	11	5	Critical care medicine
I	Man	46	Daejeon	7	15	Critical care medicine
J	Man	49	Seoul	21	8	Emergency medicine

EM, emergency medicine; EMS, emergency medical services.

Table 2. Themes and subthemes of findings

Theme	Subtheme
Theme 1. The LST Decision Act is easier to explain to family members than brain death OTD, but it does not fit well in an emergency medical setting.	The LST Decision Act is a legal way to stop life-sustaining care. The LST Decision Act is perceived to be an easier and more well-known option. However, the LST Decision Act does not always fit well with the emergency medical setting.
Theme 2. Many family members decide to stop LST before physicians even mention brain death or OTD.	Families decide more proactively to stop LST than expected. Families are the first to mention stopping LST. Families decide more quickly to stop LST than expected.
Theme 3. Family members view stopping LST as being about comforting patients without bothering them, and decision-makers are therefore no longer willing to choose OTD.	For families, stopping LST is about making patients feel comfortable and not making them feel further distress. After deciding to stop LST, neither the family members nor the doctor wants to try additional strategies. They do not want to donate organs after LST is stopped.
Theme 4. Stopping LST does not always result in brain death, but cases of brain death are preceded by stopping LST.	Not all patients in whom LST is stopped reach brain death. However, before brain death, LST is stopped.
Theme 5. Since the LST Decision Act, the number of TTM cases and potential brain death donors has decreased.	The frequency of TTM has decreased. The number of potential brain death donors and brain death OTD has decreased.

LST, Life-Sustaining Treatment; OTD, organ tissue donation; TTM, targeted temperature management.

Theme 1: The LST Decision Act is easier to explain to family members than brain death OTD, but it does not fit well in an emergency medical setting

Participants had various perspectives on the LST Decision Act. They stated that it was easier to explain LST decisions than brain death OTD. They also mentioned having more knowledge about the LST Decision Act than about brain death OTD. They welcomed the LST Decision Act as a legitimate way to withhold or withdraw LST. However, participants shared that the LST Decision Act did not fit well with actual emergency medical practice.

(1) The LST Decision Act is a legal way to stop life-sustaining care.

Participant D: In the end, from a practitioner’s perspective, and this is what we felt before, we could not make decisions to stop LST due to the law (which did not exist), but now stopping LST can be done easily (because the law has been made).

(2) The LST Decision Act is perceived to be an easier and more well-known option.

Participant D: (LST) is well recognized. It is going on, and the medical staff seems to be actively explaining it as well. Organ donation is actually not well explained if patients aren’t candidates for it ... Although even if they are candidates... they tend to be reluctant about organ donation as well. Even (non-specialized) medical staff know how to explain life-sustaining care easily.

Participant F: It is easy to explain the suspension of LST, but there seems to be an obstacle that makes it challenging to explain organ donation.

Some participants expressed discomfort, saying that applying the LST Decision Act to patients could lead to other legal problems due to its unsuitability in emergency settings.

(3) However, the LST Decision Act does not always fit well with the emergency medical setting.

Participant C: And I do not know if I am mistaken, but the doctors um ... (after) the Boramae Hospital case and the Severance Hospital case, (they) are much more afraid that they will be harmed in various legal issues. If I keep digging, the discomfort is about the decision to stop LST, that is, discomfort with the paperwork, the legal (aspects). The responsibility will be finally returned to us; the precedent legal (verdicts) that have been given to date show that. So, I think (this may be why stopping LST) has been reduced. I think it’s because (physicians) do not want to be involved in the legal aspect of things.

Theme 2: Many family members decide to stop LST before physicians even mention brain death or OTD

Participants stated that after the LST Decision Act was implemented, withholding or withdrawing LST was more common than expected. Notably, they reported that family members often mentioned stopping LST before a physi-

cian provided an explanation and made the decision quickly. They reported that increasingly active choices have been made to withhold or withdraw LST in elderly patients. They also mentioned that, in many cases, family members had already made decisions through family meetings before meeting a physician.

(1) Families decide more proactively to stop LST than expected.

Participant D: It seems that there is a strong tendency to give up a little more easily and end things a little sooner because of the law on LST decisions. Therefore, they have already given up on LST, even in the emergency room.

(2) Families are the first to mention stopping LST.

Participant I: In the media, the suspension of LST has been promoted. Many people know about that. In many cases, they bring it up first, asking, “Can’t LST be stopped in this case?” Many people say that. Thus, it is difficult for us to explain organ donation.

(3) Families decide more quickly to stop LST than expected.

Participant B: When I actually tell them about it, because they make the decision faster than I expect and give me an answer, most of the time, they decide to stop LST. So, uh, it’s a little disheartening. When I hear their decision, or because they decide to stop LST more quickly than I thought they would, I feel a little embarrassed these days.

Participant E: Nowadays, once I get consent to stop LST, it is just done, and it seems that some people decide to stop the treatment quickly because this has become a part of the culture. Even if it has not been more than a few days, or only a day or two has passed, they decide to stop LST right away.

Theme 3: Family members view stopping LST as being about comforting patients without bothering them, and decision-makers are therefore no longer willing to choose OTD

Participants reported that family members recognized withholding or withdrawing LST as making patients feel comfortable and not bothering them anymore. They stated that family members did not want any further interventions to be performed after they decided to stop LST. According to them, family members seemed to perceive organ donation as “pestering [patients] by adding something” to the care of patients who were medically unable to recover. Respondents said that some physicians also seemed unwilling to take action after family members decided to withhold or withdraw LST.

(1) For families, stopping LST is about making patients feel

comfortable and not making them feel further distress.

Participant A: Suspending LST is viewed as not treating the patient, but organ donation involves removing the patient’s organs. First, the family members wish not to bother the patient any longer.

(2) After deciding to stop LST, neither the family members nor the doctor wants to try additional strategies.

Participant A: I ask families that have decided to stop LST, “So, you want to stop LST, and then how about donating the organs?” If you ask, they all say no. Those who decide to stop LST are, um ... they do not seem to want to do anything more complicated or emotionally more burdensome anymore.

(3) They do not want to donate organs after LST is stopped.

Participant H: Yes, that’s right. I think so. They don’t want it. They simply want to let the patient go more comfortably. The family members have no interest (in organ donation) from the moment they provide written consent to stop LST, so the medical staff feel the same way.

Theme 4: Stopping LST does not always result in brain death, but cases of brain death are preceded by stopping LST

Participants stated that not all patients in whom LST was withheld or withdrawn died. They also noted that not all patients living with LST—post-cardiac arrest survivors or those with devastating brain injuries—reached a state of brain death. Therefore, they said that a careful approach is needed to deal with how the LST Decision Act has affected brain death OTD. However, they shared that the number of patients who could have reached a state of brain death but whose family members decided to withhold or withdraw LST has increased since the enforcement of the LST Decision Act.

(1) Not all patients in whom LST is stopped reach brain death.

Participant F: On the premise that the patient’s medical condition is irreversible, an explanation and decision to stop LST is made. However, this does not mean that the patient always becomes brain-dead, so the two concepts are slightly different. If you decide to stop LST now, quite a few cases will not develop brain death.

(2) However, before brain death, LST is stopped.

Participant A: When the family asks, “If this person is brain-dead, then when will it be (declared as) brain death?” no one can guarantee that brain death will be declared or, if so, when. Then, the families ask themselves, “Do we have to pay all the hospital bills until brain death?” If this

happens, they will not be able to donate organs. It seems that families are deciding more often that they just want to stop at this stage rather than continue to struggle. Thus, there appears to be a trend in which people who might become brain-dead die before they actually do.

Theme 5: Since the LST Decision Act, the number of TTM cases and potential brain death donors has decreased

Participants said that TTM has become less common since the enforcement of the LST Decision Act; consequently, the number of suspected brain death patients has decreased. However, they stated that this decrease could not be attributed to the LST Decision Act. They emphasized that the recent decline in the survival rate of cardiac arrest patients and other social factors such as COVID-19 should also be considered.

(1) The frequency of TTM has decreased.

Participant G: Yes, the frequency of TTM also decreased significantly. I think it was reduced to a third.

Participant G: Since the law on the LST decision itself is first explained in the emergency room, once they have decided not to receive LST, they do not even try TTM.

(2) The number of potential brain death donors and brain death OTD has decreased.

Participant F: Since the medical staff focus on making decisions about life-sustaining care, they do not seem to provide an option for organ donation. This appears to have affected the reduction in cases.

DISCUSSION

This study explored emergency physicians' experiences and perspectives related to brain death OTD after the LST Decision Act was implemented in Korea. To our best knowledge, this is the first study to explore emergency physicians' experiences and perspectives of brain death OTD.

As reflected by theme 1, the reason participants welcomed the LST Decision Act seemed to be the earlier absence of legal guidelines for physicians regarding the choice to withhold or withdraw LST in Korea [10]. However, participants thought that the Act is insufficient or does not fit the emergency setting because end-of-life care sometimes could not be clearly distinguished from resuscitation care such as tracheal intubation, use of vasopressors, and hemodialysis. In the emergency context, attempts to save

the patient's life may succeed [11].

Participants said that physicians and family members perceived LST as easier and more widely known than brain death OTD. However, a study that investigated Australian physicians' knowledge of withholding and withdrawing LST found that emergency and respiratory medicine physicians had lower scores than average. In comparison, geriatric and palliative medicine specialists had significantly higher scores [12]. This is due to differences in emergency physicians' roles and scope of practice in Korea and Australia. Another reason for this perception may be the fact that the LST Decision Act was enforced more recently than the OTD-related act and considerable publicity was associated with its enforcement.

This study found that increasingly many family members decided to withhold or withdraw LST before physicians mentioned brain death or OTD. A study conducted in France similarly reported that dying in the ED was associated with elderly patients with multiple chronic diseases, and the decision to withhold and withdraw LST had been made in advance [13]. Emergency medicine is a medical specialty that focuses on providing care for acutely ill or injured patients who need immediate interventions. Thus, the ED might not be the appropriate place for end-of-life care. However, these findings imply that withholding or withdrawal of LST in EDs is rapidly becoming more widespread.

Participants mentioned that, for family members, attempts of OTD after stopping LST were perceived as tormenting patients. This finding appears to reflect aspects of Korea's cultural background, which resists the mutilation of bodies even after death. There are few autopsy cases in Korea, except for suspected crimes [14]. According to Kim et al. [15], this background is explained as originating from Confucianism. Confucianism's most essential and decisive concept is filial piety or duty toward parents, including maintaining the same body that one receives from one's parents, even if they are deceased. In the study of Lee et al. [16], 75% of participants showed a positive attitude toward organ donation; however, only 38.1% agreed to donate their family members' organs, and 20.6% wanted to have the dead bodies of their family members or their own bodies preserved. For the patient's family, stopping LST is a decision to keep the patient's body; conversely, organ donation can damage the body. This perspective of Koreans seems to have led to a decrease in brain death OTD, especially in the context of the LST Decision Act.

Not all patients develop brain death, and not all life-sus-

taining care can lead to organ donation. Nevertheless, the loss of potential organ donors in the ED or non-ICU settings has been described in many studies. A study in the Netherlands analyzing the number of unrecognized potential organ donors admitted to the ED with diffuse brain injuries found an 11% to 34% under-recognition of the total pool of organ donors [17]. In Korea, donations after cardiac death are limited, and most donations are brain death OTD [18]. With the implementation of the LST Decision Act, patients have the option of dying as a result of withholding and withdrawing LST before brain death. However, the number of TTM cases and losses of potential organ donors in Korea has not yet been investigated, and further research is needed.

According to a study in the United States, successful donations were more likely when potential donors were referred from the ED [19]. In contrast, another study identified that potential cases of solid organ donation were missed in the ED [20]. The ED is becoming a place where life ends by withholding or withdrawing LST, and simultaneously, another life could begin through OTD. However, summarizing our research findings, it seems that the new implementation of the LST Decision Act does not coexist with brain death OTD.

Although this study provides novel insights by presenting emergency physicians' perspectives on brain death OTD since the LST Decision Act was implemented, it has limitations. First, this study considered the phenomenon of interest only 2 years after the LST Decision Act was implemented. This issue should be further investigated in long-term studies. Second, this study was conducted among emergency physicians who care for potential brain death patients. Therefore, the participants had more experience with OTD and may have had more positive attitudes toward organ donation than inexperienced emergency physicians. However, as described in the Methods section, this qualitative study did not aim to generalize, but instead focused on exploring the experiences and perspectives of a minority group. Hence, the study participants were deliberately selected to reflect the purpose of the study. Nonetheless, it is important to note that the findings of this study should not be generalized as reflecting all emergency physicians' experiences and perspectives.

In conclusion, based on a comprehensive consideration of the experiences and perspectives of emergency physicians who care for potential brain death patients, the findings of this study suggest that the increasing trend in choices to withhold or withdraw LST in patients

resuscitated after cardiac arrest is expected to continue for the time being, and the brain death OTD is likely to decrease unless a supplementary policy that connects stopping LST to brain death OTD is prepared. As a supplementary point, we suggest that a KODA coordinator be automatically connected with patients' family members who choose to withhold and withdraw LST, including in the ED. Furthermore, communities should form organ transplantation teams that will work with multiple regional emergency medical centers to improve coordination and collaboration.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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