



Trends in Nursing Research on Life-Sustaining Treatment in South Korea after the Enforcement of the Act on Decisions on Life-Sustaining Treatment

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Purpose: This study investigated trends of nursing research on life-sustaining treatment in South Korea. **Methods:** The period for data search was set from January 2018 to December 2020. The major search terms used were advance directives and life-sustaining treatment. Of the 492 records identified in the initial search, 461 articles were excluded for various reasons. A total of 31 records were included in the final qualitative analysis. **Results:** Sixteen studies had nursing students as study subjects, while nine studies had nurses as study subjects. The majority of the studies employed cross-sectional descriptive surveys as their research design. The major themes that emerged from the studies were as follows: attitudes toward withdrawal of life-sustaining treatment, knowledge of and attitudes toward advance directives, perceptions of a good death, and nurses' attitude toward life support care. Most of the studies reviewed concluded that attitudes toward withdrawal of life-sustaining treatment significantly impacted both knowledge of and attitudes toward advance directives and perceptions of a good death. **Conclusion:** To date, Korea still lacks extensive nursing research concerning life support care. Further research is needed to provide systematic education for nursing ethics and life support care, as well as the introduction of a specialist course. Furthermore, a multidisciplinary approach is necessary to provide diverse support systems and policy measures. In particular, since nurses are directly responsible for providing life support care, nurses' roles should be expanded in accordance with the Act on Decisions on Life-Sustaining Treatment.

Key Words: Life support care, Advance directives, Nursing research

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INTRODUCTION

As the human lifespan has been extended, there have been controversies in medicine on life-sustaining treatment due to issues related to human dignity and ethical considerations [1]. In 1997 at Boramae Hospital, a guardian requested discharge of a patient kept alive on a ventilator for economic reasons [2]. In this case, the patient died after a ventilator was removed

upon the request of the guardian who signed a pledge not to raise any legal issues, and medical professionals were charged with aiding murder. In 2008, guardians requested discontinuation of life-sustaining treatment for an individual known as Grandmother Kim, who suddenly lost consciousness and entered a vegetative state during a lung cancer test, which led to a judgment permitting death with dignity [2].

Based on these cases, a social consensus on meaningless life-

sustaining treatment gradually emerged, and active discussions were held about withdrawal of life-sustaining treatment as the need for evidence to help with rational decision-making on life-sustaining treatment increased [3]. Accordingly, the Act on Hospice and Palliative Care and Decisions on Life-Sustaining Treatment for Patients at the End of Life (hereinafter referred to as the Act on Decisions on Life-Sustaining Treatment) was enacted and a life-sustaining treatment decision system was implemented starting on February 4, 2018 [4].

According to the Article 2 Paragraph 4 of the Act on Decisions on Life-Sustaining Treatment, life-sustaining treatment means “medical treatment by cardiopulmonary resuscitation, hemodialysis, administering anticancer drugs, mechanical ventilation, etc. to a patient at the end of life, as prescribed by Presidential Decree, which only prolongs the process of dying without curative effect” [4].

Three years have passed since the enforcement of the Act on Decisions on Life-Sustaining Treatment, and there is still a fundamental limit on ensuring patients’ death with dignity. However, efforts are continuing to be made to improve detailed operational aspects of the Act on Decisions on Life-Sustaining Treatment [5], and, due to these legal changes, social perceptions on life-sustaining treatment are gradually changing.

In order to maintain a patient’s end-of-life quality of life, the decision on life-sustaining treatment is a crucial factor [6]. In addition, withdrawal of life-sustaining treatment has significant benefits for both patients and their families in terms of reducing stress and the family’s burden and guilt, as well as obviating the need to decide upon life-sustaining treatment in a time of crisis [7].

The role of medical professionals in caring for terminal patients is important. In particular, since nurses are in direct charge of end-of-life care, choices regarding life-sustaining treatment can have an important effect on end-of-life care provided to patients [8]. Nurses are in a key position to set standards for values about life-sustaining treatment, help patients’ decision-making by preparing for patients’ last moments as an advocate for patients, protect patients’ autonomy and rights, and play a role as counselors and mediators [9].

Therefore, with the emerging role of nurses and the necessity of nursing care in relation to life-sustaining treatment, domes-

tic research on life-sustaining treatment can suggest practical improvements in the field, system-level changes, and alternatives to policies. Research on these issues can also contribute to the development of research and practice by identifying deficiencies.

In other countries where reforms related to life-sustaining treatment were first implemented, extensive research is being conducted on the development of programs related to the withdrawal of life-sustaining treatment, interventions related to the decision to withdraw life-sustaining treatment, the role of caregivers in life-sustaining treatment, euthanasia, and decisions to withdraw life-sustaining treatment.

This study aimed to identify trends in domestic nursing research on life-sustaining treatment after the enactment of the Act on Decisions on Life-Sustaining Treatment in February 2018. Furthermore, this study is expected to provide basic data to suggest directions for future follow-up nursing research.

METHODS

1. Study design

This study is a secondary analysis of trends in domestic nursing research on life-sustaining treatment from February 2018, when the Act on Decisions on Life-Sustaining Treatment entered into force, to December 2020.

2. Literature search

Data were collected from January 2021 to March 2021, and approval from the institutional review board of S Hospital (PSSH0475-202110-HR-019-01), with which the author was affiliated, was obtained before conducting the study. The data were searched and collected from February 2018 to December 2020 using domestic databases: Research Information Sharing Service (RISS), Data Base Periodical Information Academic (DBPIA), and Korean Studies Information Service System (KISS). The data included all domestic research articles on nursing and research articles co-authored by nursing researchers among non-nursing journals. If dissertations were published in academic journals, the journal articles were included. The search keyword was “life-sustaining treatment.” Additionally, “advance directives” and “withdrawal of life-

sustaining treatment,” which were topic words and similar words to the search keyword, were included in the literature search of domestic online databases to avoid missing potentially relevant articles.

3. Literature selection

The inclusion criteria were quantitative, qualitative, and mixed studies on life-sustaining treatment from February 2018 to December 2020. The exclusion criteria were (1) duplicates, (2) articles not related to nursing, (3) articles presented at conferences or symposia, (4) articles with a study period before February 2018, and (5) articles not on life-sustaining treatment.

Studies were selected from domestic online databases. The first database search identified 492 articles in total (66 articles from KISS, 154 articles from DBPIA, and 272 articles from RISS). Among these, 371 articles not related to nursing were excluded. The remaining articles were reviewed by the selection criteria based on their abstracts and main texts. Two articles presented at conferences or symposia, 66 duplicate articles, 20 articles with a study period before February 2018, and 2 articles not related to life-sustaining treatment were additionally excluded. Finally, 31 out of 492 articles were selected. During the literature selection, the information of each article was summarized in terms of the author(s), published year, study participants and design, study tools, and study results. The literature selection process was performed by two

researchers independently, and the researchers chose whether to select a study after a thorough discussion if they had different opinions (Figure 1).

RESULTS

1. Methods of the included studies

The general characteristics of the 31 included studies were presented in Table 1. The numbers of domestic nursing research by year on life-sustaining treatment were 1 in 2018, 14 in 2019, and 16 in 2020, respectively, and most articles were published in 2020 (51.6%). The numbers of studies conducted at hospitals, in regional communities, and at schools were 13 (including 1 long-term care hospital), 4, and 14 (including 1 middle and high school), respectively. The numbers of studies in which the participants were nurses, nursing and medical students, adults, older adults, adolescents, hospital workers, and cancer patients were 9, 14, 2, 2, 1, 1, and 2, respectively. The most frequent participants were nursing and medical students, who were participants in 14 articles (45.2%). The numbers of articles with sample sizes of less than 100,

Table 1. Characteristics of the Included Studies (N=31).

Characteristics	Categories	n (%)
Publication year	2018	1 (3.2)
	2019	14 (45.2)
	2020	16 (51.6)
Study location	Hospitals and long-term care hospitals	13 (41.9)
	Communities	4 (12.9)
	Schools	14 (45.2)
Participants	Nurses	9 (29.0)
	Nursing students and medical students	14 (45.2)
	Adults and pre-elderly	2 (6.5)
	Elderly	2 (6.5)
	Adolescents	1 (3.2)
	Hospital workers	1 (3.2)
	Cancer patients	2 (6.5)
Sample size	100>	4 (12.9)
	100~200	15 (48.4)
	201~300	11 (35.5)
	>300	1 (3.2)
Quantitative studies	Experimental studies	1 (3.2)
	Non-experimental studies	28 (90.3)
Qualitative studies	Q-methodology	1 (3.2)
	Phenomenology	1 (3.2)

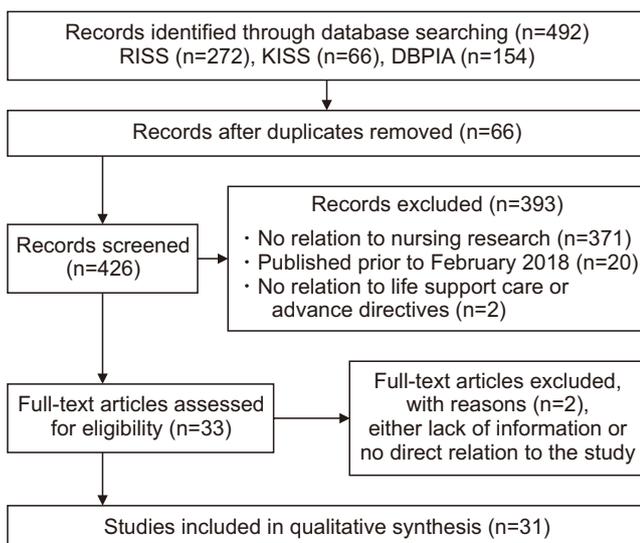


Figure 1. Study flow diagram of the review.

100~200, 201~300, and more than 300 were 4, 15, 11, and 1, respectively, and almost half of the studies had a sample size between 100 to 200 (15 articles, 48.4%). Twenty-nine articles were quantitative studies (1 experimental study, 28 descriptive studies). There were 2 qualitative studies (1 article using Q methodology, and 1 phenomenological study). Quantitative research was most frequently conducted using descriptive study designs, with 28 articles (90.3%).

Table 2 presents the characteristics of the tools used in 29 quantitative studies, excluding 2 qualitative studies. Most of them were on knowledge, attitudes, and awareness regarding life-sustaining treatment or withdrawal of life-sustaining

treatment. Most tools used were revised and supplemented by changing the participants or the terminology of the original tools developed by domestic or foreign researchers, or some of the questions were extracted. The reliability, as shown by Cronbach's α , was 0.60~0.96. There were 13, 13, 11, and 8 articles using tools on knowledge of advance directives, attitudes toward withdrawal of life-sustaining treatment, perceptions of a good death, and attitudes toward advance directives, respectively.

Table 2. Instruments Used in the Included Studies (N=31).

Instruments	Studies
Advance directive knowledge	A10, A14, A16, A17, A18, A24, A25, A28, A8, A15, A19, A21, A26
Advance directive attitude	A15, A16, A17, A18, A22, A24, A25, A26
Advance directive writing intention	A25
Perceptions of a good death	A1, A2, A5, A7, A14, A22, A26, A27, A28 A8, A19
Perceptions of life-sustaining treatment decisions	A27
Terminal care attitude	A26, A27
Meaning of life	A1
Attitudes toward withdrawal of life-sustaining treatment	A1, A2, A4, A5, A7, A9, A10, A11, A17, A3, A6, A8, A12
Perception of patients' rights	A7
Attitude toward euthanasia	A5
End-of-life care performance	A28
Nursing stress related to life-sustaining	A9, A28
Preference in care near the end of life	A29
Preparation for death	A29
Anxiety regarding death	A11, A20, A23, A29
Respect for life	A4, A12
Attitude to death	A2, A4, A8
Self esteem	A4, A15
Death acceptance	A11
Dignified death attitudes	A23, A24
Ego integrity	A10
Hospice perception	A15, A16
Knowledge of medical interventions after the discontinuation of life-sustaining care	A17
Ethics values	A18
Moral sensitivity	A3, A8, A22
Consciousness of biomedical ethics	A3, A22
Awareness toward withdrawal of life-sustaining treatment	A20
Knowledge of end-of-life care, life-sustaining treatment, and advance directive	A21
Educational needs regarding advance directives	A21
Knowledge of organ donation and transplantation	A13
Attitude of organ donation and transplantation	A13
Awareness of death	A13
Knowledge and perceptions of hospice palliative care	A13
Role perception	A9

Table 3. Participants, Research Design and Results of Studies (N=31).

Research design	Number	Author (yr)	Participants	Sample	Research design	Results
Quantitative studies - experimental studies	A25	Kang & Kim (2020)	Cancer patients	62	Quasi-experimental survey	Video education participation group: advance directive knowledge (F=52.82, P<0.001, effect size=0.96) advance directive attitude (F=12.21, P<0.001, effect size=0.46) intention to write (F=18.22, P<0.001, effect size=0.56) A higher proportion of writing than the control group ($\chi^2=13.87$, P<0.001)
Quantitative studies: cross-sectional descriptive surveys	A1	Kim et al. (2019)	Nursing college students	293	Cross-sectional descriptive survey	Attitude toward withdrawal of life-sustaining treatment: perceptions of a good death ($\beta=0.32$, P<0.001) consciousness of biomedical ethics ($\beta=0.16$, P=0.004) Factors explained about 16% of the variance
	A2	Yang (2020)	Nursing college students	139	Cross-sectional descriptive survey	Attitude towards withdrawal of life-sustaining treatment: perceptions of a good death (r=0.31, P=0.000) Factors explained about 8.5% of the variance
	A3	Jang & Ahn (2019)	Nursing college students	302	Cross-sectional descriptive survey	Attitude toward withdrawal of life-sustaining treatment: moral sensitivity ($\beta=0.25$, P<0.001), biomedical ethics awareness ($\beta=-1.17$, P=0.003) Factors explained about 7% of the variance
	A4	Bang & Sim (2020)	Nursing college students	158	Cross-sectional descriptive survey	Respect for life and self-esteem (r=0.18, P<0.05) (+) attitude toward death and self-esteem (r=0.18, P<0.05) (+) attitude toward death and attitude toward withdrawal of life-sustaining treatment (r=0.26, P<0.01) (+) self-esteem and attitude toward withdrawal of life-sustaining treatment (r=0.18, P<0.05) (+)
	A5	Kim et al. (2020)	Nursing college students	288	Cross-sectional descriptive survey	Well-dying recognition: attitude toward withdrawal of life-sustaining treatment (r=0.22, P<0.001) (+) attitude toward active euthanasia (r=0.200, P<0.001) and passive euthanasia (r=0.21, P<0.001) (+) Attitude toward withdrawal of life-sustaining treatment: active (r=0.29, P<0.001) and passive euthanasia (r=0.41, P<0.001) (+) Active euthanasia: passive euthanasia (r=0.74, P<0.001) (+)

Table 3. Continued 1.

Research design	Number	Author (yr)	Participants	Sample	Research design	Results
Quantitative studies: cross sectional descriptive survey	A6	Jeon (2019)	Medical students and nursing students	240	Cross-sectional descriptive survey	Awareness toward withdrawal of life-sustaining treatment: medical students answer- 'patient's will' is important nursing student answer- 'patient and family's will' is important. Attitude toward withdrawal of life- sustaining treatment: nursing students: 'family will and decision' was more important than the medical students. Attitude toward withdrawal of life- sustaining treatment: awareness of good death ($\beta=0.35, P<0.001$) their own view of death ($\beta=0.24, P=0.001$) Factors explained about 27.0% of the variance
	A7	Kim (2020)	Long-term care hospital nurses	163	Cross-sectional descriptive survey	Attitude toward withdrawal of life- sustaining treatment: experience of withdrawal of life- sustaining treatment: ($\beta=0.27, P<0.001$), moral sensitivity ($\beta=0.23, P=0.001$), knowledge of advance directives ($\beta=0.39, P<0.001$) Factors explained about 48% of the variance
	A8	Choi & Kim (2020)	General hospital nurses	189	Cross-sectional descriptive survey	Attitude toward life sustaining treatment: work unit ($F=3.01, P=0.032$) Role perception: nursing stress ($r=0.25, P=0.001$) (+) Nursing stress: role perception ($\beta=0.267$) > medical ward ($\beta=-0.242$) > intensive care unit ($\beta=-0.228$) > gender ($\beta=0.192$)
	A9	Lee (2020)	General hospitals nurses	160	Cross-sectional descriptive survey	Attitude toward withdrawal from life- sustaining treatment: economic status ($\beta=0.21, P=0.005$), ego-integrity ($\beta=0.18, P=0.026$), knowledge of advance directives ($\beta=0.24, P=0.002$) Factors explained about 17.1% of the variance
	A10	Yeom & Seo (2019)	Older person's	155	Cross-sectional descriptive survey	

Table 3. Continued 2.

Research design	Number	Author (yr)	Participants	Sample	Research design	Results
Quantitative studies: cross sectional descriptive survey	A11	Seo & Shin (2019)	Elderly cancer patients	128	Cross-sectional descriptive survey	Attitude toward withdrawal of life-sustaining treatment: death anxiety ($r=-0.21, P=0.018$) (-)
	A12	Lee & Kim (2020)	Adolescents	180	Cross-sectional descriptive survey	Attitude toward withdrawal of life-sustaining treatment: not knowing about life sustaining treatment ($\beta=-0.30, P<0.001$), no experience of withdrawal of life-sustaining treatment education ($\beta=0.21, P=0.003$), no experience of respect for life education ($\beta=-0.16, P=0.021$), no experience death (family or acquaintance ($\beta=-0.13, P=0.039$), respect for life and attitude toward withdrawal of life-sustaining treatment ($\beta=-0.07, P=0.347$) Factors explained 16.7% of the variance
	A13	Je & Jeong (2018)	General hospital workers	228	Cross-sectional descriptive survey	Attitude toward withdrawal of life-sustaining treatment: hospice ward ($\beta=0.18, P=0.004$), attitudes toward tissue donation and transplantation ($\beta=0.22, P<0.001$), perceptions of hospice palliative care ($\beta=0.33, P<0.001$), Factors explained about 32.5% of the variance
	A14	Seo & Lee (2020)	Nursing college students	321 (187/134)	Cross-sectional descriptive survey	Nursing students with experience of patients' terminal care: awareness of well-dying ($r=0.19, P=0.008$) and Advance directives knowledge ($r=0.20, P=0.006$): advance directives attitude ($t=3.01, P<0.003$) (+) Nursing students with no experience of patients' terminal care: advance directives attitude and awareness of well-dying ($r=0.18, P=0.029$) (+)
	A15	Jung & Jeong (2020)	Nursing college students	216	Cross-sectional descriptive survey	Attitude toward advance directives: perceptions of hospice ($\beta=0.34, P=0.000$), gender ($\beta=0.21, P=0.000$), intention to execute advance directives ($\beta=17, P=0.006$), predicted influence of religion on one's life ($\beta=0.14, P=0.030$) Factors explained about 29.7% of the variance
	A16	Lee & Choi (2020)	Nursing college students	181	Cross-sectional descriptive survey	Knowledge of advance directives: attitude toward advance directives ($r=0.38, P<0.001$) (+), hospice perception ($r=0.28, P<0.001$) (+)
	A17	Lee (2019)	Nursing college students	215	Cross-sectional descriptive survey	Knowledge of medical interventions after stopping life-sustaining treatment: advance directive attitudes ($r=-0.21, P=0.002$) (-), attitude toward withdrawal of life-sustaining treatment ($r=-0.14, P=0.036$) (-) Advance directive knowledge: advance directive attitude ($r=-0.14, P=0.046$) (+)

Table 3. Continued 3.

Research design	Number	Author (yr)	Participants	Sample	Research design	Results
Quantitative studies: cross sectional descriptive survey	A18	Lee et al. (2019)	Nursing college students	232	Cross-sectional descriptive survey	Ethics values: advance directive knowledge ($r=0.17, P=0.009$) (+), advance directive attitude ($r=0.20, P=0.002$) (+), advance directive knowledge and advance directive attitude: ($r=0.17, P=0.012$) (+)
	A19	June et al. (2019)	Nursing college students	133	Cross-sectional descriptive survey	Perceptions of well-dying were significantly different by grade group ($t=-2.26, P=0.026$) Knowledge of advance directives was significantly different by pre-education experience ($P<0.050$) Death attitude and death anxiety ($r=0.27, P<0.001$) (-)
	A20	Choo & Kim (2020)	Nursing college students	157	Cross-sectional descriptive survey	Educational needs regarding advance directives: life-sustaining treatment ($r=0.18, P=0.018$), advance directive knowledge ($r=0.18, P=0.018$)
	A21	Jeong & Cheon (2020)	General hospital nurses	169	Cross-sectional descriptive survey	Attitude toward advance directives: age ($\beta=0.44, P=0.006$), value of advance directives ($\beta=0.20, P=0.005$), perception of good death ($\beta=0.21, P=0.004$), moral sensitivity ($\beta=0.15, P=0.034$), euthanasia ($\beta=-0.16, P=0.047$)
	A22	Kim & Kim (2020)	General hospitals nurses	176	Cross-sectional descriptive survey	Explanatory power of regression model was 32.3% ($F=7.20, P<0.001$) Signed an advance directive, as compared to the group with no advance directive: anxiety for death ($F=1.85, P=0.177$), dignified Death Attitudes ($F=14.81, P<0.001$)
	A23	Yang & Hwang (2020)	Pre-elderly	135 (68/67)	Cross-sectional descriptive survey	

Table 3. Continued 4.

Research design	Number	Author (yr)	Participants	Sample	Research design	Results
Quantitative studies: cross sectional descriptive survey	A24	Yoo & Yi (2020)	Middle-aged adults	211	Cross-sectional descriptive survey	Attitude toward advance directives: attitude toward dignified death (P<0.001), knowledge of advance directive (P=0.001), intention to write advance directive (P=0.002) Factors explained about: 24.1% of the variance
	A26	Jang & Kim (2019)	Nursing college students	169	Cross-sectional descriptive survey	Terminal care attitude: advance Directives attitudes ($\beta=0.36$, $P<0.001$), major satisfaction ($\beta=0.30$, $P<0.001$), perceptions of a good death ($\beta=0.24$, $P<0.001$), experience of living with aged ($\beta=0.15$, $P=0.014$) Factors explained about: 37% of the variance
	A27	Kang (2019)	Intensive care nurses	109	Cross-sectional descriptive survey	Terminal care attitudes: a clinical career in the ICU ($\beta=0.20$, $P=0.035$), a sense of closeness ($\beta=0.19$, $P=0.041$), perceptions of life-sustaining treatment decision ($\beta=0.22$, $P=0.017$) Factors explained about 14% of the variance
	A28	Kim et al. (2019)	General hospitals nurses	233	Cross-sectional descriptive survey	End-of-life care performance: perceptions of a good death ($\beta=0.28$, $P<0.001$) > experience of education ($\beta=0.19$, $P=0.002$) > nursing stress related to life-sustaining ($\beta=0.13$, $P=0.026$) advance directive knowledge ($\beta=0.13$, $P=0.009$) > Factors explained about 19.1% of the variance
	A29	Kim (2019)	Elderly	204	Cross-sectional descriptive survey	Preference in care near the end of life: family decision factor > pain factor > decision-making by the medical personnel > spiritual factors > autonomous decision factor Autonomous decision factors: age, marital status, bereavement, preparation for death, death anxiety, and good income (37.6%) - bereavement ↑ Family decision factors: death preparation, death anxiety, marriage and bereavement (52.1%) - death preparation ↑ Factors by medical personnel: preparation for death, anxiety of death, bereavement and marital status (42.4%) - bereavement ↑ Intensive care nurses did not receive adequate training on advanced care directives and/or terminal care. Nurses experienced psychological difficulties: thus, the quality of terminal care varied between nurses depending on the individual nurse's competence.
Qualitative study	A30	Ahn et al. (2020)	Intensive care nurses	3	Phenomenology	The nurses' attitudes were classified into four different types: transfer of self-determination, preference for life-sustaining treatment, respect of self-determination and recommendation of advanced directive.
	A31	Lee et al. (2019)	Nurse	25	Q-methodology	

2. Attitudes toward withdrawal of life-sustaining treatment and perceptions of a good death (Table 3)

The studies conducted on attitudes toward withdrawal of life-sustaining treatment among nursing college students showed that consciousness of consciousness of biomedical ethics and a good death were correlated with attitudes toward withdrawal of life-sustaining treatment [A1,A2]. Moral sensitivity [A3], self-esteem, and attitudes toward dying were correlated with attitudes toward withdrawal of life-sustaining treatment [A4]. Active and passive euthanasia were also correlated with attitudes toward withdrawal of life-sustaining treatment [A5]. Medical students mostly supported patients' choice and patient-centered decision-making on withdrawal of life-sustaining treatment in terms of awareness and attitudes of withdrawing life-sustaining treatment, while nursing students' attitudes focused on the importance of choice and decision-making by the families as well of patients [A6]. The awareness of a good death and value on death influenced attitudes toward withdrawal of life-sustaining treatment in nurses in long-term care hospitals [A7]. Attitudes toward withdrawal of life-sustaining treatment of nurses were correlated with moral sensitivity, knowledge of advance directives, and perceptions of a good death [A8] and were significantly different according to wards [A9]. Ego-integrity, knowledge of advance directives, and economic status significantly affected attitudes toward withdrawal of life-sustaining treatment of older adults [A10]. Attitudes toward withdrawal of life-sustaining treatment were not statistically correlated with death acceptance, but were significantly correlated with death anxiety. Higher positive attitudes toward withdrawal of life-sustaining treatment were associated with lower death anxiety [A11]. In a study on adolescents, bioethics had no effect on attitudes toward withdrawal of life-sustaining, but personal experience such as awareness of life-sustaining treatment, having experienced education on withdrawing life-sustaining treatment, having experienced education on life respect, and having experienced death of family members or acquaintances had an effect on attitudes toward withdrawal of life-sustaining treatment [A12]. In a study on hospital workers, working in a hospice ward, attitudes toward donation of human organs and

transplants, and awareness of hospice and palliative care were significantly associated with attitudes toward withdrawal of life-sustaining treatment [A13].

3. Knowledge and attitudes toward advance directives (Table 3)

There were no differences in knowledge of advance directives and well-dying between nursing students who had observed end-of-life care and those who had not. Nursing students who had observed end-of-life care had more positive attitudes toward advance directives than those who had not [A14]. The factors affecting attitudes toward advance directives were awareness of hospice, gender, preparation of advance directives, and the impact of religion on life [A15]. Knowledge on advance directives was correlated with attitudes toward advance directives and awareness of hospice [A16,A17] as well as ethical values [A18]. In addition, knowledge of advance directives was significantly higher in third- and fourth-year nursing students than in first- and second-year nursing students, and was significantly different according to the experience of prior education [A19]. There was a significant correlation between death attitude and death anxiety, but no correlation between those variables and knowledge of advance directives. There was a significant difference between nursing students' age and the completion of hospice education [A20]. In a study on nurses' educational need on advance directives, a higher knowledge level on life-sustaining treatment and advance directives was associated with a higher educational need [A21]. Knowledge about advance directives was confirmed as the factor with the strongest effect on attitudes toward withdrawal of life-sustaining treatment [A8]. The factors affecting attitudes towards advance directives were awareness of a good death, euthanasia (a subdomain of consciousness of biomedical ethics), and moral sensitivity [A22]. Death anxiety did not show a significant difference between people who wrote advance directives and those who did not in a study on pre-elderly individuals. The pre-elderly who wrote advance directives had higher scores for attitudes toward dignified death than those who did not [A23]. The factors affecting attitudes toward advance directives were death with dignity, knowledge of advance directives, and willingness to write advance directives, and the most important factor was attitudes toward

death with dignity [A24]. A study conducted among cancer patients that explored education using videos to promote an understanding of advance directives found that intervention led to positive attitude changes, increasing participants' willingness to write advance directives, which could contribute to a greater understanding of life-sustaining treatment and self-decision [A25].

4. Attitudes toward end-of-life care and performance (Table 3)

More favorable attitudes toward end-of-life care among nursing students were associated with more favorable attitudes toward advance directives, higher satisfaction with their major, more positive attitudes toward a good death, and experience of living with older adults. In particular, attitudes toward advance directives were identified as a predictor of end-of-life care [A26]. In a study on nurses, nurses in intensive care units with more career experience, higher intimacy, and higher awareness toward decisions on life-sustaining treatment showed more positive attitudes toward end-of-life care [A27]. The major predictors affecting end-of-life care performance were perceptions of a good death, having experienced education on life-sustaining treatment, nursing stress related to life-sustaining treatment, and knowledge of advance directives, in descending order [A28]. The factors affecting nursing stress related to life-sustaining treatment were gender, working in an internal medicine ward, working in an intensive care unit, and role perception [A9].

5. Other study results (Table 3)

A study on older adults investigating the relationships among death anxiety, death preparation, and preference for end-of-life care showed that preference for end-of-life care was correlated with death anxiety and death preparation, and artificial extension of life was the least preferable. The most important factor was family, followed in descending order by medical professionals, and spirituality. Death preparation, death anxiety, age, marital status, and income level were also significant influencing factors [A29].

In a phenomenological study, nurses in the intensive care unit had no opportunity to receive education on decision-making on life-sustaining treatment and end-of-life care, experi-

enced psychological conflict, and performed end-of-life care differently depending on personal competence [A30]. In a Q methodology study, nurses' attitudes toward life-sustaining treatment were classified into 4 types: type 1 ('transfer of self-determination'), type 2 (preference for life extension treatment'), type 3 ('respect of self-determination'), and type 4 ('recommendation of advance directives'). Type 4 ('recommendation of advance directives') appeared for the first time after the Act on Decisions on Life-Sustaining Treatment entered into force, and it was differentiated type compared to those that appeared in previous studies. Nurses with this type of attitude (i.e., with desirable attitudes toward life-sustaining treatment as medical professionals) would contribute positively to the proliferation of advance directives in society [A31].

DISCUSSION

This study identified trends in domestic nursing research after February 2018 when the Act on Decisions on Life-Sustaining Treatment entered into force. Although the inclusion of 31 studies can be interpreted as indicating a lack of domestic nursing research after the Act on Decisions on Life-Sustaining Treatment, the number of studies steadily increased from year to year.

The most frequent study participants were nursing students. This is because nursing students, as future nurses, can have an appropriate knowledge of advance directives and positive attitudes toward them at this time of increasing social interest with the legal implementation of advance directives [9].

Meanwhile, studies on nurses were not actively conducted. Scherer et al. [10] reported that care from nurses who provided 24-hour nursing at patients' sides had important effects on decision-making and attitudes of patients and caregivers. Although nurses by themselves are aware that they should participate actively in decision-making on life-sustaining treatment, since they are in close contact with patients more than anyone else and understand the needs of patients and doctors most, research on this issue is not being conducted, most likely due to nurses' busy workloads.

There were studies on adults, adolescents, older adults, and hospital workers, but it was difficult to access these groups from an ethical perspective before the Act on Decisions and

Life-Sustaining Treatment. Since the implementation of the Act can facilitate approaches from an ethical perspective, it is necessary to conduct research using various methods (e.g., cohort or experimental studies) [11] and participants by obtaining sufficient samples.

There were 2 qualitative studies and 29 descriptive quantitative studies, indicating that the research in this field needs to be diversified in terms of study design.

The most frequently used tools dealt with attitudes toward withdrawal of life-sustaining treatment, perceptions of a good death, knowledge and attitudes toward advance directives, and attitudes toward end-of-life care and performance of end-of-life care.

Attitudes toward withdrawal of life-sustaining treatment had effects on consciousness of biomedical ethics and perceptions of a good death in studies on nurses and nursing students. Previous results reported conflicting results according to which consciousness of biomedical ethics had no effect on attitudes toward withdrawal of life-sustaining treatment. However, studies reporting that perceptions of a good death had an effect on attitudes toward withdrawal of life-sustaining treatment showed similar results [9]. A study on nursing students also found that consciousness of biomedical ethics was affected by attitudes toward withdrawal of life-sustaining treatment [12]. However, there was a conflicting study [13] on nurses, which found that perceptions of a good death were not positively correlated with attitudes toward withdrawal of life-sustaining treatment. This discrepancy may have occurred because the study was conducted when even medical professionals were not widely aware of the concept of life-sustaining treatment.

In a study on older adults, attitudes toward withdrawal of life-sustaining treatment had effects on the ego-integrity, knowledge of advance directives, and economic status. Attitudes toward withdrawal of life-sustaining treatment were correlated with death anxiety in a study conducted among patients, and more positive attitudes toward withdrawal of life-sustaining treatment were associated with lower death anxiety. A previous study showed similar results that attitudes toward withdrawal of life-sustaining treatment were positive in people with higher knowledge of advance directives and higher ego-integrity, as well as in older adults with good economic status and good health [8].

Patient-centered decision-making on withdrawal of life-sustaining treatment was an important factor for medical students, while nursing students focused on the importance of choices made by family members as well as by patients.

In a study on adolescents, consciousness of biomedical ethics did not affect attitudes toward withdrawal of life-sustaining treatment. However, it was reported that personal experience, such as awareness of life-sustaining treatment, having experienced education on withdrawing life-sustaining treatment, having experienced education on life respect, and having experienced the death of family members or acquaintances had an effect on attitudes toward withdrawal of life-sustaining treatment [14]. A direct comparison was not possible since there were no previous studies on nursing students, medical students, and adolescents.

A study showed that nursing students' perceptions of a good death had an effect on attitudes toward withdrawal of life-sustaining treatment. There was no difference in perceptions of a good death and knowledge of advance directives between nursing students who had observed end-of-life care and those who had not. A previous study showed similar results that nursing students' perceptions of a good death had a significant effect on their attitudes toward withdrawal of life-sustaining treatment [9].

Preparation of advance directives was a factor affecting attitudes toward advance directives, and higher knowledge level was associated with higher educational needs for advance directives. Knowledge of advance directives was the most important factor affecting attitudes toward withdrawal of life-sustaining treatment for nurses, and the factors affecting the attitudes toward advance directives were perceptions of a good death, consciousness of biomedical ethics, and moral sensitivity. A previous study showed similar results that higher knowledge of advance directives of nurses was significantly associated with higher confidence and educational needs [15].

A study conducted among nursing students found that knowledge of advance directives was correlated with attitudes toward advance directives, and knowledge of advance directives showed significant differences according to experience of prior education, age, and completion of hospice and palliative education. In previous studies, nursing students showed relatively positive attitudes toward advance directives [16] and

attitudes toward advance directives were an important factor affecting end-of-life care [17]. In a study on patients, education using video enhanced the willingness to write advance directives, and pre-elderly patients who wrote advance directives had higher scores for attitudes toward dignified death than those who did not [18]. There were no previous studies after the Act on Decisions on Life-Sustaining Treatment entered into force in 2018 that would be directly comparable.

More positive attitudes toward advance directives of nursing students were associated with more favorable attitudes toward end-of-life care. Nurses in intensive care units with more career experience and higher awareness toward decisions on life-sustaining treatment showed more positive attitudes toward end-of-life care. According to a previous study, nurses in the intensive care unit had positive awareness of withdrawal of life-sustaining treatment. They placed higher importance on patient participation or respect for patients' opinions and objected to unilateral decision-making by medical professionals [19]. The predictors of end-of-life care performance were perceptions of a good death, having experienced education on life-sustaining treatment, nursing stress related to life-sustaining treatment, and knowledge of advance directives, in descending order. Moral sensitivity and work experience were factors affecting end-of-life care performance in a previous study [20].

In a qualitative study, 'recommendation of advance directives' among nurses newly appeared as a type of attitude toward life-sustaining treatment after the Act on Decisions on Life-Sustaining Treatment entered into force. In a phenomenological study, nurses in an intensive care unit had no opportunities to receive education on life-sustaining treatment and performed end-of-life care differently depending on personal competence. Efstathiou et al. [21] stated that life-sustaining treatment is a problem facing intensive care unit nurses and they should play a major role in life-sustaining treatment. Furthermore, job development in order to provide effective life-sustaining treatment including communication, patient- and family-centered decision-making, continuity of treatment, emotional and spiritual support, and support for medical professionals can improve life-sustaining treatment for critical patients and their families [21].

As shown in the results of domestic nursing research after

the Act on Decisions on Life-Sustaining Treatment entered into force, nurses perform end-of-life care directly. In Japan, the US, and the UK, when a consensus of a patient and family cannot be reached, a palliative care team reaches a consensus through a separate committee, and nurses are the main personnel in the committee even though various occupations participate [22]. In addition, education experience, end-of-life experience, and completion of education on life-sustaining treatment had effects on nurses as well as nursing students, but they did not have an opportunity for education. Dowling et al. [7] investigated universal knowledge and lack of education on life-sustaining treatment in several countries, and stated that there are universally important barriers to implementation. The study is similar to domestic research in that it describes the level of occupational uncertainty on life-sustaining treatment.

A report of the Institute of Policy Studies in Singapore stated that although doctors and nurses were not prepared to deal with terminal patients only with the basic training they had received, the number of specialists was too small, and there was discomfort due to stigma and superstition, they should have skills to talk about death with patients [23].

Jack et al. [24] reported that education on advance care planning enhanced confidence in front-line medical professionals and prevented potential delays. Hussin et al. [25] also stated that it was necessary to improve the level of professionalism, training, knowledge, and attitudes of nurses in order to improve the quality of life-sustaining treatment. Therefore, a systematic curriculum and expert courses [26] that incorporate life-sustaining treatment into the curriculum of nursing ethics, geriatric nursing, oncology nursing, and hospice palliative nursing should be introduced so that nursing students, nurses, and specialized nurses can recognize the withdrawal of life-sustaining treatment as a good death.

In South Korea, the current life-sustaining treatment decision form is completed based on the judgment of two doctors. In US and Canada, nurses judge and write a form on terminal patients without a doctor's signature, and nurses are also working as clinical ethics consultants [23]. Dowling et al. [7] also emphasized the main role of nurses in authorizing patients to express their will and preferences, supporting patients' abilities to decide upon their treatments, initiating end-of-life care discussions early, and advocating for the recognition of

advance care guidelines. Therefore, in South Korea as well, the role of nurses should be expanded through a proper arrangement of nursing personnel, the development of nursing fees for life-sustaining treatment, and the development of end-of-life care performance and life-sustaining treatment guidelines.

As Hue et al. [27] reported that the rate of end-of-life patients using intensive care units decreased by 10% as a result of support for palliative medical service in hospitals in the US, introducing palliative care service programs can be a way to improve the quality of end-of-life care. In South Korea, it is necessary to develop service programs for palliative care at palliative care centers and medical institutions through multidisciplinary collaboration, as well as to prepare various types of institutional systems and support.

It is also required to review patients' wills on emergencies and advance care, and this will be a task that South Korea needs to address in the future. Furthermore, since education and promotion using videos for patients and promotion of withdrawal of life-sustaining treatment for the general public shape attitudes toward perceptions of a good death, proactive promotion of withdrawal of life-sustaining treatment through various media is necessary.

Lastly, with the enforcement of the Act on Decisions on Life-Sustaining Treatment, interest and awareness of withdrawal of life-sustaining treatment have increased in accordance with the purpose of the act to promote human dignity and comfortable death. According to trends in domestic nursing research, nursing ethics education, systematic education, and expert courses on life-sustaining treatment should be introduced. In addition, various support and systematic plans should be prepared through the development of guidelines and programs on life-sustaining treatment, sharing other countries' cases including palliative service centers other than medical institutions, research of various types, and a multidisciplinary approach. In particular, nurses' roles should be expanded in order to respond proactively to environmental changes in life-sustaining

treatment. This study is significant in that it identifies the current status of domestic nursing research after the enforcement of the Act on Decisions on Life-Sustaining Treatment and suggests directions for future research. However, there is a possibility that unpublished studies were excluded since studies were searched using online databases. There is also a limitation in interpreting the results, since this study only included domestic nursing studies after the Act on Decisions on Life-Sustaining Treatment entered into force. As nursing research on life-sustaining treatment is still lacking in South Korea, an expanded study including nursing research from other countries should be conducted. In addition, studies using text network analyses are suggested in the future.

CONFLICT OF INTEREST

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

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AUTHOR'S CONTRIBUTIONS

Conception or design of the work: all authors. Data collection: JHC. Data analysis and interpretation: JHC. Drafting the article: JHC. Critical revision of the article: all authors. Final approval of the version to be published: all authors.

SUPPLEMENTARY MATERIALS

Supplementary materials can be found via <https://doi.org/10.14475/jhpc.2022.25.1.25>.

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