Factors influencing Preferences for Care near the End-of-life among Undergraduate Nursing Students

Jooyoung Cheon
Assistant Professor, Department of Nursing Science, Sungshin Women's University

간호대학생 임종치료선호도에 영향을 미치는 요인

천주영
성신여자대학교 간호학과 조교수

Abstract This study aimed to identify factors influencing the preferences for end-of-life (EOL) care among undergraduate nursing students. In this cross-sectional study, data were collected from December 2017 to February 2018. This study included 217 undergraduate nursing students. Factors influencing the preference for 'autonomous physiological decision-making' were the following: education level(by grade), having biomedical education, attitude towards death, and attitude towards life-sustaining treatments (LSTs). Preference for 'decision-making by healthcare professionals' was related to having a religion. Factors influencing the preference for 'spirituality' were education level, having a religion, and academic major satisfaction. Preference for 'pain control' was associated with education level, experience with dying patients, bad self-rated health, attitude towards death, and attitude towards LSTs. The study findings suggest that education regarding LSTs, EOL care, and EOL decision-making in nursing curricula is essential.

Key Words : Nursing students, Terminal care, Death, Life support care, Decision making

요 약 본 연구는 간호대학생들의 임종치료선호도에 영향을 미치는 요인을 확인하기 위해 수행되었다. 이 조사 연구는 2017년 12월부터 2018년 2월까지 수행되었으며, 최종 217명의 간호대학생의 자료가 수집되었다. '자율적 의사결정' 선호도에 영향을 미치는 요인은 교육수준(학년), 생명의료윤리 교육 수강, 죽음에 대한 태도, 연명치료에 대한 태도였다. '의료인의 의사결정'에 대한 선호도는 종교를 가지는 것과 관련이 있었다. '영성'에 대한 선호도에 영향을 미치는 요인은 교육수준(학년), 종교를 가짐, 전공만족도였다. '통증 조절'에 대한 선호도는 교육수준(학년), 사망한 환자 관찰 경험, 나쁜 주관적 건강상태, 죽음에 대한 태도, 연명치료에 대한 태도와 관련이 있었다. 본 연구 결과는 간호학 전공 커리큘럼에서 연명치료, 생애말기간호 및 생애말기 의사결정에 관한 교육이 필수적임을 시사한다.

주제어 : 간호대학생, 임종기치료, 죽음, 연명치료, 의사결정

1. Introduction

In Korea, the Boramae Hospital case in 1997 and the "Grandma Kim" case in 2009 have sparked debate regarding the withdrawal of life-sustaining treatments, the responsibility of health care professionals in end-of-life care, and the need for laws that prevent futile care and support death with dignity [1]. The Korean National Assembly passed the "Law on Hospice and Palliative Care and Determination of Life-Sustaining Treatment for Terminally Ill Patients" in January 2016; this law allowed incurable terminally ill patients to withdraw from life-sustaining treatments. This law came into effect on February 4, 2018; this stimulated an interest in advance directives, which are legal documents giving instruction regarding life-sustaining treatments and other preferences for end-of-life care of terminally-ill patients in South Korea [2]. In addition, there has been growing scrutiny concerning the role of health care professionals, especially the role of nurses, in end-of-life care [3-5].

Nurses are in a crucial position to assess patients' preferences for end-of-life care and play an important role facilitating shared decision-making among patients, families, and health care professionals [3,4]. Nurses also provide information to patients and their family members about the patient's diagnosis, prognosis, types of life-sustaining treatments, the expected outcomes of life-sustaining treatments, and the completion of advance directives [3,5]. Therefore, nurses' attitudes and preferences for end-of-life care have a significant influence on end-of-life care discussion and decision-making among patients and family members [3]. Nursing students are aware of the necessity for advance directives and withdrawal of life-sustaining treatments, but they also have to consider human dignity and bioethics in decisions regarding withdrawal of life-sustaining treatments [3,6-8].

However, as diverse and complex ethical conflicts are common in the field of nursing practice, many nurses and nursing students do not have sufficient knowledge and confidence regarding advance directives, withdrawal of life-sustaining treatments, and end-of-life care as advocates of patients and family members, even if they have solid ethical values [3,4,8-10].

Even though most nurses will care for end-of-life patients at some point in their careers, to our knowledge, no previous study has examined nursing students' end-of-life care preferences and the factors that influence them. A previous study found that students' comfort while caring for dying patients was related to less positive attitudes towards end-of-life care, and that their knowledge about symptom management and spiritual care at the end-of-life was insufficient [9]. In a recent study in Korea, more than half of the nursing students reported that their ethical values adapted to the situation, and one third answered that they sometimes felt confused about their ethical values regarding end-of-life care [7].

Since the enforcement of the law, previous definition and process of end-of-life care should be revised, and the education regarding advance directives, withdrawal of life-sustaining treatments, and new ethical values should be provided to nursing students [7-9]. Therefore, the identification of nursing students' preferences for end-of-life care is important for developing the necessary educational programs and bioethics curricula that may help them engage in end-of-life care with confidence. Therefore, this study examined nursing students' preferences within end-of-life care and identified factors associated with said preferences among undergraduate nursing students in South Korea.

2. Methods

2.1 Study Design and Sample

This cross-sectional study aimed to identify factors influencing the preferences for end-of-life care among undergraduate nursing students. The subjects of this study were undergraduate nursing students enrolled in a women's university located in Seoul. Those who understood the purpose of this study gave their consent to participate. This study excluded from the final data analysis those questionnaires that showed insufficient literacy or incomplete responses. The sample size was calculated using the G*power 3.1 program. When the linear multiple regression statistics of the F-test test were selected and the effect size .15, power .95, significance level .05, and a maximum of 10 predictors were selected, the minimum number of subjects required was 172; the dropout rate was considered when collecting data. Thus, 230 questionnaires were distributed and 220 were collected. This study included 217 questionnaires in our final analysis, having excluded three due to insufficient data.

2.2 Measures

This study included the following participants' characteristics: education level (by grade), religion, perceived economic status, academic major satisfaction, clinical practice experience, end-of-life patient observation experience, whether they had biomedical ethics education, and self-rated health.

For our analysis, we established the following four research measures: 1) knowledge regarding end-of-life care, life-sustaining treatments, and advance directives, 2) attitude towards death, 3) attitude towards withdrawal of life-sustaining treatments, and 4) end-of-life preferences.

Knowledge regarding end-of-life care, knowledge regarding life-sustaining treatments, and knowledge regarding advance directives were measured using tools developed by Hong and Kim [11]. Knowledge was scored from 0 to 26 based on the following items: 11 questions regarding end-of-life care, 6 questions regarding life-sustaining treatments, and 9 questions regarding advance directives. The answer options were 'yes, 'no, or 'I don't know. The total knowledge score was obtained by adding up the scores from each subsection: 0-11 points for knowledge regarding end-of-life care, 0-6 points for knowledge regarding life-sustaining treatments, and 0-9 points for knowledge regarding advance directives. The higher the score was, so too was the participants' knowledge. Cronhach's α was .92 in previous study [11], while it was .85 in this study.

Moreover, participants' attitude towards death was measured using tools developed by Thorson and Powell [12] and adapted by Park [13] with tools modified by Kim [14]. With 20 questions rated on a 4-point scale, the score ranged from 20 to 80. Higher scores indicated a more positive attitude towards death. Cronhach's α was .76-.83 in previous studies [12,14], while it was .88 in this study.

Attitude towards withdrawal of life-sustaining treatments was measured using a tool developed by Park [15] which was modified by Byun et al. [16]. With 19 questions rated on a 5-point scale, the score ranged from 19 to 95. A higher score indicated a more positive attitude towards withdrawal of life-sustaining treatments. Cronhach's α was .88 in previous study [16], while it was .73 in this study.

Preferences for end-of-life care were measured using the Korean version of Preference for Care near the End of Life Scale-Korean Version (PCEOL-K). The PCEOL-K was translated by Lee and Kim [17] from the tool developed by Gauthier and Froman [18], and consists of 26 questions rated on a 5-point scale. This tool includes five subscales: 8 items for 'autonomous physiological decision-making' that represent life-sustaining treatments preferences; 4 items

for 'decision-making by a health care professional'; 6 items for 'spirituality,' which refers to the religious (spiritual) needs or beliefs; 5 items for 'family,' which represent preference for family participation during end-of-life decision-making; and 3 items for 'pain control.' Since preferences may differ by subscale, it was necessary to analyze each subscale rather than the total score [6]. In the case of five items that consisted of negative sentences, these were reverse-coded and summed to facilitate comparison with other questions and for easier interpretation of the results. A high score on any subscale indicated the participants' preference for it in an end-of-life situation. Cronhach's α was .42-.89 in previous study [17], while it was .46-.87 in this study.

2.3 Data Collection

Data were collected from December 2017 to February 2018. The subjects were recruited using two methods. In the first method, the research assistant recruited students who voluntarily remained after class to be informed about the study's purpose and methods. The research assistant then obtained signed consent from the interested students. Afterwards, a questionnaire survey was conducted, lasting about 15 minutes. In the second method, interested students voluntarily contacted the research assistant after seeing a recruitment announcement on the department bulletin board. Then, the research assistant explained the study's purpose and methods to the interested students. After obtaining informed consent, a survey was conducted, lasting for about 15 minutes.

2.4 Ethical Considerations

This study was approved by the institutional review board of the university (SSWUIRB 2017-075). The author explained the purpose of the study to the professor in the nursing

department and obtained approval for the survey. The author did not participate in the explanation of the study and distribution of the questionnaire, and the research assistant was in charge of the questionnaire survey, to ensure that students who were vulnerable subjects could voluntarily participate in the study without coercion.

The research assistant fully explained to the students that they had the freedom to withdraw immediately from participation without any negative consequences if they no longer wished to respond to the questionnaire. The consent obtained after explaining that there were no disadvantages to refusing or discontinuing participation in this study, and that confidentiality and anonymity were guaranteed. When the students filled out and submitted the structured questionnaire, the consent form and the questionnaire were immediately kept separate and securely stored to prevent leakage of personal information.

2.5 Data Analysis

The collected data were analyzed using SPSS/Win 22.0 software. The characteristics of the students were analyzed using numbers and percentages, mean, and standard deviation. Additionally, differences in the participants' preference for end-of-life care were analyzed using an independent t-test and an analysis of variance (ANOVA), and the post-test was analyzed using Scheffe's multiple comparison test. Further, knowledge regarding end-of-life care, knowledge regarding life-sustaining treatments, knowledge regarding advance directives, attitude towards death, attitude towards withdrawal of life-sustaining treatments, and preference for end-of-life care were analyzed using mean and standard deviation; the reliability of the measures was reported using Cronbach's α. Moreover, the correlation between the main variables was analyzed using the

Pearson correlation coefficient. Finally, multiple regression analysis was conducted to analyze the factors influencing end-of-life care preferences among nursing students.

3. Results

3.1 End-of-life Care Preference according to the Characteristics of the Subjects

All participants were female nursing students (N=217), and their average age was 21.0±1.6 years. Table 1 shows differences in end-of-life preferences according to participants' characteristics. The preference score for 'autonomous physiological decision-making' was higher among students with biomedical ethics education (t=-3.614, p<.001). The preference score for 'decision-making by health care professionals' was significantly higher among freshmen than among sophomores (F=3.430, p=.018) and it was higher among students who have a religion than among those who have not (t=-2.202, p=.029).

The preference score for 'spirituality' was significantly higher in the upper academic levels than in the lower levels (F=12.619, p<.001) and among participants who have a religion than for those who have not (t=-5.081, p<.001). In addition, students with high academic major satisfaction (F=5.408, p=.005), with clinical practice experience (t=-4.890, p<.001), and with

Table 1. Differences in the Preferences for Care near the End-of-life according to Characteristics of Undergraduate Nursing Students   (N=217)

Characteristics	Categories	N(%)	Autonomous physiological decision-making			Decision-making by healthcare professionals			Spirituality			Family			Pain control		
			M(SD)	t/F	p-value	M(SD)	t/F	p-value	M(SD)	t/F	p-value	M(SD)	t/F	p-value	M(SD)	t/F	p-value
Grade	Freshman [a]	66(30.4)	3.0±0.8	2.502	.060	2.4±0.7	3.430	.018 a>b	3.2±0.7	12.619	<.001 a<c,d b<d	3.4±0.8	.413	.744	3.6±0.7	6.259	<.001 a<b,d
	Sophomore [b]	47(21.7)	3.4±0.6			2.0±0.7			3.6±0.8			3.4±0.7			4.0±0.6		
	Junior [c]	44(20.3)	3.4±0.7			2.1±0.7			3.7±0.7			3.6±0.8			3.8±0.5		
	Senior [d]	60(27.6)	3.3±0.8			2.3±0.8			4.0±0.6			3.5±0.8			4.1±0.6		
Having a religion	Yes	97(44.7)	3.2±0.8	1.603	.110	2.3±0.8	-2.202	.029	3.9±0.7	-5.081	<.001	3.5±0.8	-.668	.505	3.8±0.6	0.961	.338
	No	120(55.3)	3.3±0.7			2.1±0.7			3.4±0.8			3.4±0.8			3.9±0.6		
Perceived economic status	High	59(27.3)	3.2±0.8	0.412	.663	2.4±0.7	1.357	.260	3.6±0.8	0.434	.648	3.5±0.9	0.135	.874	3.8±0.7	0.173	.841
	Middle	128(59.3)	3.3±0.8			2.2±0.7			3.6±0.8			3.4±0.7			3.9±0.6		
	Low	29(13.4)	3.3±0.5			2.2±0.7			3.7±0.9			3.4±0.7			3.9±0.7		
Nursing major satisfaction	Very satisfied [a]	38(17.5)	3.4±0.7	1.242	.291	2.2±0.8	0.465	.629	3.9±0.7	5.408	.005 a>c	3.5±0.9	0.277	.758	3.9±0.8	1.450	.237
	Satisfied [b]	116(53.4)	3.3±0.8			2.3 0.7			3.6±0.7			3.5±0.7			3.9±0.6		
	Neither satisfied nor dissatisfied [c]	61(28.1)	3.1±0.7			2.1±0.8			3.4±0.8			3.4±0.8			3.7±0.6		
Experience of clinical practicum	Yes	104(47.9)	3.3±0.8	-1.419	.157	2.2±0.8	0.141	.888	3.9±0.7	-4.890	<.001	3.5±0.8	-1.180	.240	3.9±0.6	-1.897	.059
	No	113(52.1)	3.2±0.7			2.2±0.7			3.4±0.8			3.4±0.7			3.8±0.7		
Experience observing patients at end-of-life	Yes	120(55.3)	3.2±0.8	.053	.958	2.3±0.8	-.899	.370	3.8±0.6	-3.915	<.001	3.5±0.8	-0.699	.485	4.0±0.6	-2.898	.004
	No	97(44.7)	3.3±0.7			2.2±0.7			3.4±0.8			3.4±0.8			3.7±0.7		
Have received biomedical ethics education	Yes	160(73.7)	3.4±0.7	-3.614	<.001	2.2±0.8	-0.074	.941	3.6±0.7	-1.163	.246	3.5±0.8	-2.085	.038	3.9±0.6	-0.261	.794
	No	57(26.3)	3.0±0.8			2.2±0.7			3.5±0.8			3.3±0.8			3.8±0.7		
Self-rated health	Good	147(67.7)	3.3±0.8	.034	.973	2.2±0.7	-.508	.612	3.7±0.7	1.818	.072	3.5±0.8	1.340	.182	3.9±0.6	2.052	.041
	Fair or Poor	70(32.3)	3.2±0.7			2.2±0.8			3.5±0.9			3.3±0.8			3.7±0.7		

end-of-life patient observation experience (t=-3.915, p<.001) had higher preference scores for 'spirituality'. The preference score for 'family' was higher for students with biomedical ethics education than for those without it (t=-2.085, p=.038).

The preference score for 'pain control' was significantly higher among sophomores and seniors than among freshmen (F=6.259, p<.001), among students with end-of-life patient observation experience (t=-2.898, p=.004), and among students with fair or poor self-rated health than those with good self-rated health (t=2.052, p=.041).

3.2 Main Variables and End-of-life Care Preference

The mean scores of knowledge regarding end-of-life care, knowledge regarding life-sustaining treatments, and knowledge regarding advance directives were 7.82±2.34, 4.59±1.36, and 6.97±1.92, respectively. The attitude towards death score was 51.00±9.97 out of a possible 80, and the attitude towards withdrawal of life-sustaining treatments score was 65.07±6.94 out of a possible 95 points. The

Table 2. Main Variables and Preferences for Care near the End-of-life

Measures	M±SD	Range
1) Knowledge about		
- End-of-life care	7.82±2.34	0~11
- Life-sustaining treatments	4.59±1.36	0~6
- Advance directives	6.97±1.92	0~9
2) Attitude toward death	51.00±9.97	20~80
3) Attitude toward withdrawal life-sustaining treatment	65.07±6.94	19~95
4) Preferences for Care near the End-of-life		
- Autonomous physiological decision-making	3.25±0.74	1~5
- Decision-making by healthcare professionals	2.22±0.74	1~5
- Spirituality	3.60±0.75	1~5
- Family	3.45±0.77	1~5
- Pain Control	3.86±0.62	1~5

mean scores of preferences for care near the end-of-life were shown in Table 2.

The higher the knowledge regarding end-of-life care, life-sustaining treatments, and advance directives was, the lower the preference score for 'decision-making by health care professional' (r=-.137, p=.046; r=-.227, p=.001; r=-.166, p=.015, respectively), the higher the preference score for 'spirituality' (r=.144, p=.034; r=.175, p=.010; r=.160, p=.019), and the higher the preference score for 'pain control' were (r=.219, p=.001; r=.244, p<.001; r=.202, p=.003). Moreover, the more positive the attitude towards death was, the lower were the preference scores for 'autonomous physiological decision-making' (r=-.238, p=.004) and 'pain control' (r=-.142, p=.043). The positive attitude toward withdrawal of life-sustaining treatments was negatively correlated with the preference for 'autonomous physiological decision-making' (r=-.194, p=.006), but was positively correlated with the preference score for 'pain control' (r=.285, p<.001).

3.3 Factors influencing End-of-life Care Preference

In order to identify the factors influencing end-of-life care preference among nursing students, variables with significant differences in scores for each end-of-life care preference subscale and variables with significant correlation with each subscale were selected for the final analysis (Table 3).

The Durbin-Watson statistics was close to the reference value of 2 (1.73-2.15), and the variance inflation factor (VIF) was lower than 10 (1.05-2.20), the tolerance was more than 0.1 (0.46-0.98). Therefore, the basic hypotheses for the regression formula were all satisfied.

The factors influencing the preference for 'autonomous physiological decision-making' were the following: being a college senior (β =.178, p=.046), having biomedical ethics

Table 3. Factors associated with Preferences for End-of-life Care

Characteristics	Autonomous physiological decision-making			Decision-making by healthcare professionals			Spirituality			Family			Pain control		
	B	β	t(p)	B	β	t(p)	B	β	t(p)	B	β	t(p)	B	β	t(p)
(Constant)	4.799		9.018(<.001)	2.812		5.154(<.001)	3.078		6.178(<.001)	2.739		4.644(<.001)	2.218		5.150(<.001)
Sophomore (ref. freshman)	.251	.139	1.624(.106)	-.295	-.161	-1.876(.062)	.414	.225	2.907(.004)				.319	.206	2.615(.010)
Junior (ref. freshman)	.172	.097	1.130(.260)	-.235	-.128	-1.490(.138)	.376	.203	2.591(.010)				-.018	-.012	-.138(.890)
Senior (ref. freshman)	.291	.178	2.014(.046)	.071	.043	.487(.627)	.706	.422	5.285(<.001)				.202	.143	1.522(.130)
Having a religion				.263	.176	2.459(.015)	.451	.301	4.563(<.001)						
Very satisfied with nursing major							.260	.138	2.135(.034)						
Receiving biomedical ethics education	.340	.209	2.938(.004)							.253	.143	2.011(.046)			
Experience observing dying patients													.221	.175	2.191(.030)
Self-rated health: fair or poor													.345	.158	2.427(.016)
Knowledge about end-of-life care	.013	.040	.450(.653)	-.007	-.022	-.247(.805)	.003	.010	.123(.902)	-.017	-.049	-.544(.587)	.044	.153	1.827(.069)
Knowledge about life-sustaining treatments	-.042	-.073	-.738(.461)	-.111	-.193	-1.948(.053)	.032	.044	.617(.538)	.054	.088	.914(.362)	-.009	-.017	-.190(.850)
Knowledge about advance directives	.001	.003	.037(.970)	-.009	-.022	.242(.809)	-.009	-.022	-.262(.794)	.002	.004	.040(.969)	.002	.005	.055(.956)
Attitude towards death	-.016	-.216	-3.060(.003)	-.003	-.039	-.549(.584)	-.007	-.099	-1.531(.127)	-.011	-.138	-1.948(.053)	-.011	-.179	-2.702(.008)
Attitude towards withdrawal of life-sustaining treatments	-.016	-.156	-2.214(.028)	.002	.024	.334(.739)	.003	.024	.381(.704)	.015	.136	1.897(.059)	.025	.281	4.298(<.001)
	R^2=.157, Adj. R^2=.115			R^2=.133, Adj. R^2=.091			R^2=.291, Adj. R^2=.253			R^2=.067, Adj. R^2=.038			R^2=.245, Adj. R^2=.205		
F(p)	F=3.759 (<.001)			F=3.182(.001)			F=7.634(<.001)			F=2.298(.036)			F=6.077(<.001)		

education (β=.209, p=.004), negative attitude toward death (β=-.216, p=.003), and negative attitude toward withdrawal of life-sustaining treatments (β=-.156, p=.028). These variables explained 11.5% of the variance in the preference for 'autonomous physiological decision-making' (Adjust R^2=.115, F=3.759, p<.001). One factor influencing the preference for 'decision-making by health care professionals' was whether to they have a religion (β=.176, p=.015), which explained 9.1% of the variance (Adjust R^2=.091, F=3.182, p=.001).

The factors influencing the preference for 'spirituality' were the following: education level (sophomore [β=.225, p=.004], junior [β=.203, p=.010], and senior [β=.422, p<.001]), having a religion (β=.301, p<.001), and nursing students' high academic major satisfaction (β=.138, p=.034). These variables explained 25.3% of the variance in the preference for 'spirituality' (Adjust R^2=.253, F=7.634, p<.001). One factor influencing the preference for 'family' was whether to they have a religion (β=.143, p=.046)

which explained 3.8% of the variance (Adjust R^2=.038, F=3.182, p=.036). The factors influencing preference for 'pain control' were being a college sophomore (β=.206, p=.010), end-of-life patient observation experience (β=.175, p=.030), low self-rated health (β=.158, p=.016), negative attitude towards death (β=-.179, p=.008), and positive attitude towards withdrawal of life-sustaining treatments (β=.281, p<.001). These variables explained 20.5% of variance in the preference for 'pain control' (Adjust R^2=.205, F=6.077, p<.001).

4. Discussion

This study was the first to examine factors associated with end-of-life care preferences among undergraduate nursing students. In this study, knowledge regarding end-of-life care, life-sustaining treatments, and advance directives did not influence end-of-life care preferences among nursing students significantly, while

attitudes towards death and withdrawal of life-sustaining treatments were significantly influential factors. This suggests that end-of-life care preferences are influenced by attitudes and perceptions regarding death more than knowledge. A previous study found that knowledge about advance directives was not a significantly influential factor in attitudes towards end-of-life care, while attitudes toward advance directives, the perception of dignified death, and experience living with older adults were significant factors [19]. Nursing students showed less knowledge of end-of-life care and had higher ethical values compared to working nurses because they had no practical experience with dying patients and their family members [8,19], which suggests that knowledge was not a significant factor influencing end-of-life care preferences.

Regarding the preference for 'autonomous physiological decision-making,' seniors and students receiving biomedical ethics education were preferred to receive life-sustaining treatments. This finding was supported by previous research. A previous study reported that nursing students valued human dignity highly and that health care professionals' authority to refuse to withdrawal of life-sustaining treatments played a significant role in end-of-life care decisions even when patients had extremely negative prognoses [7] In another study on nursing students with clinical practice experience, a group of students thought that even terminally-ill patients with severe pain might want to prolong their lives [20].

In this study, 'decision-making by health care professionals' was the least reported preference because nursing students were strongly recognized patients' rights to self-determination at the end-of-life care [7,21]. Moreover, having a religion was the only significantly influential factor regarding this preference. People often make end-of-life decisions based on their religious affiliation [22], thus, beliefs about the power of divinity over death may influence the decisions made by health care professionals.

Education level and academic major satisfaction were significantly influential factors in the preference for 'spirituality.' No previous study has examined the relationship between the preference for 'spirituality' and academic major satisfaction; however, one study reported that nursing students' academic major satisfaction was related to positive attitudes toward end-of-life care, which was in turn positively related to perceived well-dying [19]. Further studies are needed to examine the relationship between academic major satisfaction and the preference for 'spirituality.'

Receiving biomedical ethics education was a significant factor related to family participation in end-of-life decision-making. Students may have learned throughout their ethics education about the importance of decision-making through discussions between patients and family members. In Korean culture, most people prefer that decisions be made by both patients and family members [21.23]. Therefore, biomedical ethics education curricula could include communication skills between patients, families, and health care professionals, family centered shared decision-making, and family centered multidisciplinary meetings, all of which could help nursing students' practice.

'Pain control' was the most reported preference in this study, which was consistent with previous findings in a study of life-sustaining treatments choices among nursing students and their families [24]. This suggests that pain management should be actively implemented for dying patients, even if there is no possibility of recovery. A previous study reported that caring for dying family members was influenced by nursing students' attitude towards end-of-life care [9], which is in line with our study, where students' experience observing

dying patients was a significant predictor of preference for pain management. Experience caring for dying patients might motivate students to think about end-of-life care and the benefits of pain management, and might lead to an increased preference for pain control. Interestingly, students who had a positive attitude towards death did not report a preference for 'pain control.'

In another study on nursing students' attitudes towards dignified death, 'painless' had the lowest score among characteristics that they deemed to be important to a dignified death [21], which suggests that nursing students might not consider 'pain control' as a core aspect of a dignified death. Conversely, in our study, students with a positive attitude towards withdrawal of life-sustaining treatments preferred 'pain control' as part of end-of-life care, which suggests that students might not consider 'pain control' as a type of life-sustaining treatments. Further studies should examine the specific relationships between the attitude towards death and withdrawal of life-sustaining treatments, and dignified death, and should develop educational programs including information about misconceptions and biases toward death and withdrawal of life-sustaining treatments.

Unfortunately, there was no study to determine end-of-life care preferences among nursing students. A recent study identified factors influencing end-of-life care preferences among older adults in the community and found that preparation of death and anxiety of death were also significant factors [25]. Thus, further study examining the effect of the preparation of death and anxiety of death on the preferences in nursing students may help provide more information about end-of-life preferences.

Several limitations must be considered when interpreting the findings of this study. First, its generalizability to all Korean nursing students is limited because data were collected from a women-only university. Second, there was a lack of causality because this study was a cross-sectional study design. Finally, students did not provide information regarding type of biomedical ethics education they have received. Type of biomedical ethics education might have influenced the results.

5. Conclusion

This study was the first to identify factors influencing end-of-life care preferences among undergraduate nursing students. Attitudes towards death and withdrawal of life-sustaining treatments were significantly influential factors. Knowledge regarding end-of-life care, life-sustaining treatments, and advance directives was not significant factors. Our findings suggest that structured courses in advance directives, life-sustaining treatments, and end-of-life care are needed to help nursing students recognize their attitudes and develop their ethical values through the course.

In particular, the curricula should include aspects of patient autonomy, self-determination, shared decision-making, family participation, end-of-life spiritual care, comfort care (such as pain control), and misconceptions and biases towards death and withdrawal of life-sustaining treatments. Nursing students should have the opportunity to recognize their own end-of-life care preferences and establish their ethical values before they graduate. Consequently, they should be trained to communicate with patients, family members, and other health care professionals relying on their ample knowledge of end-of-life care and positive attitude towards death and withdrawal of life-sustaining treatments. Moreover, the development of simulation scenarios that help students apply and practice what they learned should also be explored.

REFERENCES

[1] K. Ahn & H. Bae. (2010). Reflections on the movement for the legalization of "death with dignity as withdrawal of futile life-sustaining treatment" in South Korea. *Journal of Korean Law, 10(1),* 43-64.

[2] M. Kim. (2018). The problems and the improvement plan of the hospice/palliative care and dying patient's decisions on life-sustaining treatment act. *Korean Journal of Hospice and Palliative Care, 21(1),* 1-8. DOI : 10.14475/kjhpc.2018.21.1.1

[3] J. Y. Choi, Y. J. Son & K. Lee. (2020). Attitudes, perceptions, and experiences toward end-of-life care decision-making among intensive care unit nurses in Korea: an integrative review. *Journal of Korean Critical Care Nursing, 13(1),* 27-43. DOI : 10.34250/jkccn.2020.13.1.27

[4] B. Miller. (2018). Nurses preparation for advanced directives: an integrative review. *Journal of Professional Nursing, 34(5),* 369-377. DOI : 10.1016/j.profnurs.2018.07.001

[5] S. J. Lee & H. Y. Kim. (2017). Attitude, role perception and nursing stress on life sustaining treatment among intensive care unit nurses. *Korean Journal of Adult Nursing, 29(2),* 131-142. DOI : 10.7475/kjan.2017.29.2.131

[6] J. Kang, S. Yun, S. J. Kim, S. R. An, M. H. Lee & S. Kim. (2013). Preferences for care near the end of life among hospital employees. *Journal of Muscle and Joint Health, 20(3),* 197-206. DOI : 10.5953/JMJH.2013.20.3.197

[7] G. M. Kim, K. S. Sung & E. J. Kim. (2017). Awareness of nursing students' biomedical ethics and attitudes toward withdrawal of life-sustaining treatment. *Child Health Nursing Research, 23(3),* 292-299. DOI : 10.4094/chnr.2017.23.3.292

[8] H. J. Lee, J. H. Ha & J. Yun. (2019). Nursing students' knowledge, attitudes to advance medical directives and ethics values. *Journal of Korean Academy of Nursing Administration, 25(4),* 282-291. DOI : 10.11111/jkana.2019.25.4.282

[9] M. Dimoula, G. Kotronoulas, S. Katsaragakis, M. Christou, S. Sgourou & E. Patiraki. (2019). Undergraduate nursing students' knowledge about palliative care and attitudes towards end-of-life care: a three-cohort, cross-sectional survey. *Nurse Education Today, 74,* 7-14. DOI : 10.1016/j.nedt.2018.11.025

[10] N. S. Jang, H. S. Park, M. R. Kim, J. Y. Lee, Y. W. Cho, K. M. Kim & Y. J. Son. (2018). Knowledge, confidence, and learning needs regarding advance directives among hospital nurses. *Journal of Korean Critical Care Nursing, 11(1),* 35-45.

[11] S. W. Hong & S. M. Kim. (2013). Knowledge regarding advance directives among community-dwelling elderly. *Journal of Korean Academic Society of Nursing Education, 19(3),* 330-340. DOI : 10.5977/jkasne.2013.19.3.330

[12] J. A. Thorson & F. C. Powell. (1988). Elements of death anxiety and meanings of death. *Journal of Clinical Psychology, 44(5),* 691-701. DOI : 10.1002/1097-4679(198809)44:5<691::AID-JCLP2270440505>3.0.CO:2-D

[13] S. C. Park. (1992). A study on the death orientation of hospice volunteers. *Journal of Korean Academy of Nursing, 22(1),* 68-80.

[14] J. H. Kim. (2006). *Relationship between spiritual well-being and attitudes toward death in volunteers for hospice care.* Master's thesis. Kosin University, Busan.

[15] G. S. Park. (2000). *The study of consciousness of euthanasia among health professionals: Q-methodological approach.* Doctoral dissertation. Dankook University, Cheonan.

[16] E. K. Byun, H. R. Choi, A. L. Choi, K. H. Hong, N. M. Kim & H. S. Kim. (2003). An investigative research on the attitudes of intensive care unit nurses and families on terminating life support. *Clinical Nursing Research, 9(1),* 112-124.

[17] Y. J. Lee & S. M. Kim. (2009). Validating the Korean version of the Preferences for Care near the End of Life(PCEOL-K) scale. Korean Journal of Medical Ethics, 12(1), 29-42.

[18] D. M. Gauthier & R. D. Froman. (2001). Preference for care near the end of life: scale development and validation. *Research in Nursing & Health, 24(4),* 298-306. DOI : 10.1002/nur.1031

[19] I. Jang & Y. Kim. (2019). Effects of awareness to well-dying, knowledge and attitudes toward advance-directives on attitude toward end-of-life care in nursing students. *Korean Journal of Rehabilitation Nursing, 22(2),* 104-113. DOI : 10.7587/kjrehn.2019.104

[20] E. J. Lee, K. H. Hwang & O. H. Cho. (2019). Subjective attitudes towards terminal patients of nursing student with clinical practice experience: application of Q methodology. *Korean Journal of Hospice and Palliative Care, 22(4),* 156-165. DOI : 10.14475/kjhpc.2019.22.4.156

[21] K. E. Kwon & M. S. Yoo. (2018). Biomedical ethics awareness and attitudes toward dignified death and advance directives among nursing students. *Journal of Korean Academic Society of Home Health Care Nursing, 25(3),* 204-214. DOI : 10.22705/jkashcn.2018.25.3.204

[22] M. M. Garrido, E. L. Idler, H. Leventhal & D. Carr. (2013). Pathways from religion to advance care planning: beliefs about control over length of life and end-of-life values. *The Gerontologist, 53(5),* 801-816. DOI : 10.1093/geront/gns128

[23] M. H. Lee & Y. H. Park. (2015). Factors influencing attitude toward advance directives of older cancer patients. *Korean Journal of Adult Nursing, 27(4)*, 449-458. DOI : 10.7475/kjan.2015.27.4.449

[24] Y. N. Choi. & Y. S. Song. (2018). Life-sustaining treatment choices and related factors involving hospital nurses. *Journal of Korean Public Health Nursing, 32(2)*, 167-180.
DOI : 10.5932/JKPHN.2018.32.2.167

[25] A. L. Kim. (2019). Influencing factors on the elderly's preference in care near the end of life: focusing on preparation for death and anxiety for death. *Journal of the Korean Society for Wellness, 14(1)*, 113-123.
DOI : 10.21097/ksw.2019.02.14.1.113

천 주 영(Jooyoung Cheon)   [정회원]

· 2004년 2월 : 연세대학교 간호학과 (이학사)
· 2009년 2월 : 연세대학교 간호학과 (석사)
· 2016년 8월 : 미국 매릴랜드대학교 간호학과 (박사)
· 2017년 3월 ~ 현재 : 성신여자대학교 간호학과 조교수
· 관심분야 : 연명의료, 사전연명의료의향서, 임종간호
· E-Mail : jcheon@sungshin.ac..kr