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Original Article

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Knowledge, Experience, and Attitudes of Nurses at Long-Term Care Hospitals regarding Advance Directives

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Purpose: The purpose of this study was to promote awareness of the need for advance directives (ADs) and to provide baseline data for the development of a nurse training program about ADs. **Methods:** Nurses at eight long-term care hospitals in Busan and South Gyeongsang Province (N=143) were recruited using the random sampling method from December 2018 to January 2019. Data were obtained using a structured self-reported questionnaire to assess their knowledge, experience, and attitudes regarding ADs. Data were analyzed in SPSS 22.0 using descriptive statistics, the t-test, analysis of variance, the Scheffé test, Pearson's correlation coefficient, and stepwise multiple regression analysis. **Results:** The mean scores were 7.79±1.39 points for knowledge, 1.92±2.00 points for experience, and 2.80±0.24 points for attitudes regarding ADs. Knowledge and experience (r=0.32, P<0.001) had a positive correlation with knowledge and attitudes (r=0.17, P=0.39). **Conclusion:** According to the results, nurses generally had a high level of knowledge regarding ADs, which resulted in a positive attitude toward ADs. However, they had little experience with ADs. Therefore, nurses' must develop both direct and indirect experience with ADs using a practical training program to strengthen their clinical competency regarding ADs.

Key Words: Geriatric nursing, Advance directives, Knowledge, Health knowledge, Attitudes, Practice

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INTRODUCTION

1. Background

South Korea is predicted to become a super-aged society by 2030, with an anticipated 12.95 million people aged 65 years and above [1]. When the elderly approach death as a result of aging and chronic diseases, they often prefer to experience a dignified death than receive life-sustaining treatment at the end of their lives due to changing social values [2]. Given this background, advance directives (ADs), which emphasize the autonomy of patients and make it possible for them to die with dignity, are emerging as the best solution for patients to experience a dignified death [3]. ADs refer to the written directives of patients aged 19 years or above that enable them to make detailed medical decisions for themselves in advance of their health's decline according to their values after being provided sufficient information from medical professionals. The purpose of ADs is to allow individuals to make decisions for themselves regarding their treatment before death [4]. If an AD is prepared, patients' exact preferences can be known, individuals' right to self-determination can be respected, and unnecessary conflicts and difficulties between medical professionals and patients can be avoided [5].

Due to changes in family composition, the number of elderly people who spend the last part of their lives and die in long-term care hospitals is increasing rapidly. Since 2007, the number of long-term care hospitals in Korea has increased by approximately 10% each year. The number of elderly patients discharged from medical institutions due to death as of 2010 is estimated to be 96,000, and the death discharge rate of elderly people aged 75 years and above by medical institutions is 251.1 patients out of 1,000 in long-term care hospitals and 53.4 patients out of 1,000 in general hospitals. These statistics indicate that a majority of seniors meet their deaths at medical institutions, including long-term care hospitals [6]. As a result of the development of medical technologies and life-sustaining treatment, patients often continue to receive meaningless treatment despite their overall safety and declining quality of life leading up to their deaths [7]. To make life more comfortable and meaningful for patients, they should be guaranteed the right to make decisions for themselves [7]. Nurses at long-term care hospitals maintain close relationships with elderly patients and their families in all processes, from their admission to their deaths, and help them make the best choices in various medical situations and conditions [8]. Nurses play a crucial role in ensuring that the AD system remains patient-centered in order for elderly patients admitted to long-term care hospitals to experience a dignified death, and nurses should be able to provide patients and their families with sufficient and accurate information about ADs [9].

The knowledge of nurses regarding ADs is critical for encouraging patients and their families to make the best choices when they decide to sign and complete ADs [10]. Since nurses spend substantial time with patients, they have a strong understanding of patients' verbal and nonverbal expressions and can accurately translate their preferences to doctors, in addition to providing patients and their families with expert opinions and important information [11]. Therefore, nurses are the most suitable medical personnel to encourage patients and their families to make the best decisions for them by signing and completing ADs [10]. Nurses can provide patients with accurate information and encourage them to make decisions only once they have sufficient knowledge regarding ADs [12]. According to previous studies, the knowledge level of nurses regarding ADs was only about 60%, and nurses who received training regarding ADs were more knowledgeable than nurses who did not receive training [10]. These results suggest that nurses in the clinical field do not receive sufficient training about ADs, which can pose an additional barrier to the decision-making processes of patients, including concerning decisions about life-sustaining treatment. Since a lack of knowledge regarding ADs is a major reason for failure to complete ADs [12], active education regarding ADs and training by medical professionals are crucially important.

For nurses to be able to counsel a guardian on ADs, they should not just have heard of ADs but also have experience with the completion of ADs [12]. Previous studies have shown that the experience level of nurses regarding the completion of ADs varies according to the clinical environment, and although the role of nurses depends on where they work, nurses typically receive insufficient practice completing ADs even though nurses in Korea are advocates of patients [13]. One previous study found that 50.4% of ICU nurses had never heard of ADs [14], and another showed that general ward nurses also had little experience with ADs [15]. For nurses to be supporters of their patients, they should develop more experience with ADs.

Nurses at long-term care hospitals should provide sufficient information about diseases and prognoses through communication with patients in the clinical field, act as advocates, and have a positive attitude toward ADs in order to complete them properly [16]. Nurses' attitudes toward ADs are more positive when their perception of death is positive [13], if they were older and worked for a longer period of time at the hospital [16], and if they had received training regarding ADs [13,15]. In addition, significant differences were observed in nurses' attitudes toward ADs according to age, religion [17], and subjective health conditions [16,17]. Since most prior studies have been conducted with nurses of elderly patients in general wards, and due to the insufficient number of studies of nurses at long-term care hospitals, the attitudes of nurses at long-term care hospitals regarding ADs must be studied further.

Since prior studies investigating nurses and ADs have found limited awareness and knowledge regarding the need for ADs [8,9,12], further studies on the status of nurses at long-term care hospitals, who make the highest number of decisions about ADs, need to be conducted. Given that nurses at long-term care hospitals play the most crucial role in educating

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patients on ADs and promoting their completion, this study aimed to collect basic data for the development of a training program that provides nurses with an accurate awareness and knowledge of ADs by examining the knowledge, experience, and attitudes of nurses who work at long-term care hospitals regarding ADs.

2. Purpose

This study aimed to collect basic data for the development of training programs for nurses about ADs by examining the knowledge, experience, and attitudes of nurses at long-term care hospitals regarding ADs. The specific aims were as follows:

- To examine the knowledge, experience, and attitudes of the participants regarding ADs.
- To examine the knowledge, experience, and attitudes of the participants regarding ADs according to their general characteristics.
- To analyze the relationships between the participants' knowledge, experience, and attitudes regarding ADs.

METHODS

1. Study design

This was a descriptive research study to examine the general characteristics of nurses at long-term care hospitals and their knowledge, experience, and attitudes regarding ADs.

2. Participants

The analysis included nurses who worked at long-term care hospitals located in Busan and South Gyeongsang Province after excluding all participants with fewer than 3 months of work experience. The sample size was calculated using G*Power 3.1.2. The minimum sample size to conduct a correlation analysis, with a two-sided test, effect size of 0.3, significance level of 0.05, and power of 0.95, was 138. Given the potential for participants to drop out, questionnaires were distributed to 170 participants in total, and 143 total questionnaires were analyzed after excluding 27 that did not contain sufficient answers.

3. Study tools

1) General characteristics

A total of 15 general characteristics were collected, including 11 items on age, gender, experience, position, and others, in addition to items on the severity of illness in patients, the experience of patient death, the number of patient deaths per month, and experience explaining ADs, which were factors that affected the completion of ADs in a prior study [15].

2) Knowledge regarding advance directives

The AD knowledge instrument developed by Hong and Kim [18] for community-dwelling seniors that was revised and supplemented by Cho [13] for nurses was used in this study after obtaining permission from the author and developer. It comprises nine items, which are answered with "yes," "no," or "unknown." Incorrect and unknown answers receive a score of 0 points, and correct answers receive a score of 1 point. Possible scores range from a minimum of 0 points to a maximum of 9 points, and higher scores correspond to a higher level of knowledge regarding ADs.

3) Experience regarding advance directives

The Knowledge, Attitudinal, Experiential Survey on Advance Directives developed by Jezewski et al. [10] and translated and revised into Korean by Kim and Kim [15] was used after obtaining permission from Jezewski and Kim. It contains seven items in total, which are answered with either "yes" or "no" and correspond to scores of 1 point and 0 points, respectively.

4) Attitudes regarding advances directives

Attitudes were measured using the Advance Directive Attitude Scale, which was developed by Nolan and Bruder [19] and translated and revised by Kim et al. [20]. Permission was obtained from the authors to use the instrument. The instrument comprises a total of 15 items across four sub-areas: four items on opportunities for treatment choices, seven items on the effects of ADs on the family, three items on the levels of treatment patient wishes to receive, and one item on illness perception. Answers to each question are provided using a 4-point Likert scale: 1 for "not at all," 2 for "disagree," 3 for "agree," and 4 for "strongly agree." Reversed items are reverse-

coded. Possible scores range from a minimum of 15 points to a maximum of 60 points, and a higher score indicates a more positive attitude regarding ADs. The reliability of the instrument, as indicated by Cronbach's α [19], was 0.74 at the time of the instrument's development, 0.85 in the study by Kim et al. [20], and 0.70 in this study.

4. Data collection

The researchers visited eight long-term care hospitals located in Busan and South Gyeongsang Province from December 1, 2018, to January 31, 2019, to collect data after securing their cooperation for data collection. Structured questionnaires were distributed to the participants to complete. After the questionnaires were completed, they were sealed in envelopes and collected immediately.

5. Ethical considerations

This study was conducted after receiving approval from the institutional review board (IRB No 1041449-201902-HR-002) of S University in order to protect the participants. The researcher explained the purpose of the study and how to complete the informed consent form to the participants. To give their consent to participate in the study, they filled out an informed consent form. The informed consent form introduced the researchers, described the purpose and methods of the study, and stated that personal information would not be exposed for any purpose other than research and that the participants' consent may be withdrawn at any time if desired to ensure an ethical study process. Nurses who participated in the survey were given a small gift.

6. Data analysis

Data collected in this study were analyzed using SPSS for Windows version 22 (IBM Corp., Armonk, NY, USA).

- Frequencies, percentages, means, and standard deviations were calculated for the general characteristics and knowledge, experience, and attitudes regarding ADs.
- The t-test and one-way analysis were conducted to examine the differences in knowledge, experience, and attitudes regarding ADs according to general characteristics, and post-verification was conducted using the Scheffé test.
- Correlations between the knowledge, experience, and attitudes of the participants regarding ADs were analyzed using Pearson correlation coefficients.

RESULTS

1. General characteristics

The participants totaled 143 nurses, with 136 female participants (95.1%) and a mean age of 37.88 years. Eighty-six (60.1%) of the participants were married. The mean amount of clinical experience was 10.37 years, and the most common position was that of a general nurse (107, 74.8%). Sixty-nine (48.3%) participants experienced the death of a family member, and 106 (74.1%) had no deceased family members among those with whom they had lived. A total of 132 (92.3%) participants had no family members with experience regarding life-sustaining treatment, and for awareness of ADs, 67 (46.9%) participants answered that they knew a little about ADs, which was the most common answer. Among the participants, 104 (72.7%) believed that the AD system is necessary, and in terms of the timing of when ADs were completed, the highest proportion of the participants (49, 34.3%) said they completed them when patients were still healthy. A total of 75 (52.4%) participants answered "moderate" for the severity of illness in patients at which an AD should be completed. Patient deaths had been experienced by 138 (96.5%) of the participants, with 107 (73.9%) citing experiencing one patient death per month (73.9%), and 90 (62.9%) participants had no experience explaining ADs (Table 1).

2. Knowledge, experience, and attitudes regarding advance directives

The mean score for knowledge regarding ADs was 7.79±1.39 points, while the mean score for experience was 1.92±2.00 points and the mean score for attitudes was 2.80±0.24 points. For the sub-areas, the mean score for the opportunity for treatment choices was 2.84±0.35 points, while it was 2.65±0.26 points for the impact of ADs on the family, 3.01±0.34 points for the effect of ADs on treatment, and 2.10±0.59 points for illness perception (Table 2).

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Table 1. General Characteristics of the Participants (N=143).

Characteristics	n	%	M±SD (range)
Gender			
Male	7	4.9	
Female	136	95.1	
Age (yr)			
<30	42	29.4	37.38±10.77
30~39	49	34.3	(23~66)
40~49	29	20.3	
>50	23	16.1	
Marital status			
Married	86	60.1	
Unmarried	57	39.9	
Career (yr)			
<5	49	34.3	10.37±8.57
5~9	26	18.2	(0.3~40.0)
10~19	46	32.2	
≥20	22	15.4	
Position			
Staff nurse	107	74.8	
Charge nurse	36	25.2	
Experience of a family member's death			
Yes	69	48.3	
No	74	51.7	
Lived with a now-deceased family member			
Yes	37	25.9	
No	106	74.1	
Experience with life-sustaining treatment for a family member			
Yes	11	7.7	
No	132	92.3	
Awareness of advance directives			
Completely	40	28.0	
Somewhat	67	46.9	
Not very	27	18.9	
Not at all	9	6.3	
Belief in the need for advance directives			
Yes	104	72.7	
No	5	3.5	
No idea	34	23.8	
Timing of when advance directives should be completed			
When healthy	49	34.3	
When hospitalized	21	14.7	
When diagnosed as terminal	47	32.9	
Imminent death	8	5.6	
Any time	18	18.6	
Severity of illness in patients			
Severe	55	38.5	
Moderate	75	52.4	
Mild	13	9.1	
Experience of patient death			
Yes	138	96.5	
No	5	3.5	
Number of patient deaths (per month)			
1	107	73.9	
≥2	36	26.1	
Experience explaining advance directives			
Yes	53	37.1	
No	90	62.9	

Table 2. Knowledge, Experience, and Attitudes regarding Advance Directives (N=143).

Variables	M±SD (range)
Knowledge regarding ADs	7.79±1.39 (0~9)
Experience regarding ADs	1.92±2.00 (0~7)
Attitudes regarding ADs	2.80±0.24 (1~4)
Opportunity for treatment choices	2.84±0.35 (2~4)
Impact of ADs on the family	2.65±0.26 (2~4)
Effect of an AD on treatment	3.01±0.34 (3~4)
Illness perception	2.10±0.59 (1~4)

ADs: advance directives.

3. Differences in knowledge, experience, and attitudes regarding advance directives according to general characteristics

1) Knowledge regarding advance directives according to the general characteristics of participants

Differences in knowledge regarding ADs were observed in terms of the participants' awareness of the AD system (F=7.09, P<0.001), the need for the AD system (F=8.15, P<0.001), the monthly number of patient deaths (t=−3.48, P=0.001), and experience explaining ADs (t=2.23, P=0.027). According to the post-analysis, for awareness of the system, the mean score for patients who knew the AD system well was 8.20±0.99 points, which was higher than that of those who did not know the AD system well or at all, and the mean score for those who knew a little about ADs was 8.00±1.44 points, which was higher than that of those who did not know anything about the AD system. The mean knowledge score for those who did not believe there was a need for the AD system was 8.40±0.55 points, which corresponded to a higher knowledge level than that of those who answered that they did not know if there was a need for the AD system (Table 3).

2) Experience regarding advance directives according to the general characteristics of participants

Differences in nurses' experience regarding ADs showed differences according to their awareness of the AD system (F=22.89, P<0.001), the need for the AD system (F=6.33, P=0.002), and experience explaining ADs (t=9.83, P<0.001). According to the post-analysis, the mean awareness score for

Table 3. Knowledge, Experience, and Attitudes regarding Advance Directives according to General Characteristics (N=143).

Characteristics	Knowledge			Experience			Attitudes		
	M±SD	t/F	P (Scheffé)	M±SD	t/F	P (Scheffé)	M±SD	t/F	P (Scheffé)
Gender									
Male	8.57±0.79	1.53	0.187	3.14±2.54	1.57	0.119	2.89±0.35	0.91	0.367
Female	7.75±1.40			1.81±2.18			2.80±0.24		
Age (yr)									
<30	7.98±1.00	0.86	0.463	2.00±2.33	0.08	0.970	2.85±0.30	0.96	0.415
30~39	7.80±1.43			1.78±2.09			2.80±0.21		
40~49	7.45±1.96			1.90±2.14			2.77±0.21		
>50	7.87±1.01			1.83±2.41			2.77±0.25		
Marital status									
Married	7.70±1.55	−0.98	0.329	1.85±2.20	−0.18	0.867	2.80±0.22	−0.39	0.696
Unmarried	7.93±1.10			1.91±2.23			2.81±0.28		
Career (yr)									
<5[a]	7.86±1.50	0.29	0.831	2.16±2.34	1.37	0.255	2.85±0.28	3.01	0.032
5~9[b]	7.58±1.39			1.18±1.58			2.81±0.22		d>c
10~19[c]	7.78±1.40			1.91±2.28			2.72±0.18		
≥20[d]	7.91±1.15			2.05±2.30			2.87±0.26		
Position									
Staff nurse	7.77±1.44	−0.35	0.725	1.94±2.26	0.65	0.516	2.80±0.23	−0.51	0.610
Charge nurse	7.86±1.25			1.67±2.04			2.82±0.27		
Experience of a family member's death									
Yes	7.99±1.09	1.66	0.100	2.01±2.22	0.73	0.464	2.83±0.23	1.13	0.261
No	7.61±1.60			1.74±2.20			2.78±0.25		
Lived with a now-deceased family member									
Yes	7.86±1.11	0.38	0.705	2.27±2.35	1.27	0.205	2.81±0.24	0.30	0.768
No	7.76±1.48			1.74±2.14			2.80±0.25		
Experience with life-sustaining treatment for a family member									
Yes	8.45±0.69	1.66	0.099	2.18±1.83	0.48	0.333	2.96±0.36	1.50	0.163
No	7.73±1.42			1.85±2.24			2.79±0.23		

those who answered that they knew the AD system well was 3.75±2.05, which was the highest score recorded. The mean experience score for those who did not believe there was a need for the AD system was 3.20±2.28 points, which corresponded to a higher experience level than those who answered that they did not know if there was a need for the AD system (Table 3).

3) Attitudes regarding advance directives according to general characteristics of participants

Differences in nurses' attitudes regarding ADs were identified according to experience (F=3.01, P=0.032), awareness of the AD system (F=4.00, P=0.009), the need for the AD system (F=4.90, P=0.009), and experience explaining ADs (t=2.04, P=0.043). According to the post-analysis, those with 20 or more years of work experience had a more positive attitude toward ADs than those with 10~19 years of experience, and for awareness regarding the AD system, those who answered that they knew it well had a mean score of 2.90±0.27 points, which indicated a more positive attitude than those who answered that they were not aware of the AD system at all. Regarding the need for the AD system, those who answered "yes" had a mean attitude score of 2.84±0.27 points, which indicates a more positive toward ADs than those who answered that they had no idea regarding the need for the AD system (Table 3).

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Table 3. Continued.

Characteristics	Knowledge			Experience			Attitudes		
	M±SD	t/F	P (Scheffé)	M±SD	t/F	P (Scheffé)	M±SD	t/F	P (Scheffé)
Awareness of advance directives									
Completely[a]	8.20±0.99	7.09	<0.001	3.75±2.05	22.89	<0.001	2.90±0.27	4.00	0.009
Somewhat[b]	8.00±1.44		a>c, d	1.55±1.93		a>b, c, d	2.80±0.24		a>d
Not very[c]	7.04±1.32		b>d	0.30±0.87			2.72±0.17		
Not at all[d]	6.67±1.50			0.67±2.00			2.70±0.19		
Belief in the need for advance directives									
Yes[a]	8.02±1.29	8.15	<0.001	2.16±2.22	6.33	0.002	2.84±0.24	4.90	0.009
No[b]	8.40±0.55		b>c	3.20±2.28		b>c	2.76±0.08		a>c
No idea[c]	7.00±1.48			0.79±1.79			2.70±0.23		
Timing of when advance directives should be completed									
When healthy	7.69±1.66	0.85	0.494	2.27±2.40	1.19	0.319	2.86±0.26	1.53	0.197
When hospitalized	8.05±1.32			2.05±2.38			2.72±0.16		
When diagnosed as terminal	7.85±1.06			1.72±2.10			2.79±0.24		
Imminent death	8.25±1.39			1.88±1.81			2.75±0.14		
Any time	7.39±1.42			1.00±1.75			2.81±0.28		
Severity of Illness in patients									
Severe	8.05±1.06	1.65	0.195	2.36±2.19	2.25	0.110	2.80±0.17	1.44	0.240
Moderate	7.61±1.56			1.57±2.18			2.83±0.28		
Mild	7.69±1.49			1.54±2.18			2.70±0.28		
Experience of patient death									
Yes	7.78±1.41	−0.34	0.732	1.89±2.22	0.49	0.626	2.80±0.25	0.16	0.871
No	8.00±0.71			1.40±1.67			2.79±0.09		
Number of patient deaths (per month)									
1	7.59±1.50	−3.48	0.001	1.70±2.17	−1.75	0.083	2.80±0.26	−0.49	0.626
≥2	8.33±0.93			2.44±2.32			2.82±0.22		
Experience explaining advance directives									
Yes	8.09±1.04	2.23	0.027	3.81±2.04	9.83	<0.001	2.86±0.25	2.04	0.043
No	7.61±1.53			0.73±1.33			2.77±0.23		

4. Correlation between knowledge, experience, and attitudes regarding advance directives

There was a static correlation between knowledge and experience regarding ADs (r=0.31, P<0.001) and knowledge and attitudes regarding ADs (r=0.17, P=0.039), and no significant correlation was observed between attitudes and experience regarding ADs (r=0.11, P=1.83) (Table 4).

Table 4. Correlations between Knowledge, Experience and Attitudes regarding Advance Directives.

Variables	Knowledge regarding ADs	Experience regarding ADs
	r (P)	r (P)
Experience regarding ADs	0.31 (<0.001)	-
Attitudes regarding ADs	0.17 (0.039)	0.11 (0.183)

ADs: advance directives.

DISCUSSION

This study was conducted to understand the knowledge, experience, and attitudes of nurses at long-term care hospitals regarding ADs, examine the correlations between them, and provide basic data for the development of training programs on ADs.

The mean score for the knowledge of the participants regarding ADs was 7.79±1.39 out of 9 points. This was similar to the mean score of 7.62 points found in a study conducted with nurses at university hospitals [9] and higher than the

mean score of 6.91 points from a study of workers at medical institutions [21] and the mean score of 6.85 points from a study of outpatients and their guardians [22]. Nurses likely tend to be more knowledgeable about ADs than workers at medical institutions, outpatients, and guardians due to the greater number of opportunities for nurses to receive end-of-life training and the responsibility of nurses to provide information about ADs as educators and advocates for patients in their care and patients' guardians. Nurses at long-term care hospitals had a higher mean knowledge score than nurses at general hospitals and workers at medical institutions, which is likely due to nurses' frequent thoughts about death as they care for elderly or terminally ill patients, who account for the majority of patients in long-term care hospitals, and the need to write ADs in preparation for when patients lose their ability to communicate [23]. However, since ADs are not only used in long-term care hospitals, nurses with no experience with ADs or nurses in departments that would give them little related experience should also acquire knowledge about ADs and feel confident enough to use them [24]. To that end, opportunities should be created for repeated education and training, and organizations should provide new and general nurses with more experience completing ADs with the guidance of nurses with AD experience.

The mean experience score of the participants regarding ADs was 1.92±2.00 out of 7 points, which was significantly lower than the mean score of 2.36~2.95 points [3,9] recorded by nurses at university hospitals. The nurses at university hospitals had experience working in an ICU, ER, and hemato-oncology ward, and their workplaces were considered tertiary general hospitals, whereas the long-term care hospital nurses in this study worked in general wards rather than specialized departments at hospital-level institutions. According to the Life-sustaining Treatment Pilot Research Project [21], after nurses at university hospitals complete the training course for employees at registered institutions provided by the National Agency for Management of Life-sustaining Treatment, some work as AD counselors to explain ADs to others. However, since most patients at long-term care hospitals are elderly, they likely had not been educated about ADs or had given much thought to ADs previously, and nurses who care for these patients are also likely to have limited experience participating in the decision-making process related to ADs [25]. Although nurses at long-term care hospitals interact the most with terminally ill patients and families, doctors comprise the medical personnel who typically write and explain ADs in the clinical field, whereas nurses focus on providing nursing intervention on a more limited scope, including symptom control such as pain relief [3], and nurses, therefore, may have insufficient experience being involved in the decision-making process related to ADs. Nurses in the clinical field typically acquire most of their information about ADs through experience [12], and for nurses to fulfill their roles as counselors and advocates for patients and their families and participate actively in medical decision-making processes, they should steadily develop their knowledge of medical ethics, laws related to ADs, and the evolving rules and regulations regarding ADs through on-the-job training.

The mean score for attitudes regarding ADs was 2.80±0.24 out of 4 points for nurses at long-term care hospitals, which was higher than the mean score of 2.63±0.33 points recorded by nurses at general hospitals [26]. This indicates that nurses at long-term care hospitals had a more positive attitude toward ADs than nurses at general hospitals. Due to the changing composition of patients' families, many patients do not spend the rest of their lives at home but rather in the hospital, and they tend to experience death in long-term care hospitals more often than in general hospitals [8]. Nurses at long-term care hospitals were likely found to have a more positive attitude toward ADs due to the many decisions they must make in the clinical field concerning life-sustaining treatment since the implementation of the Act on Decisions on Life-Sustaining Treatment in 2018, and although they do not participate directly in the decision-making process related to ADs, nurses have the most experience providing care for participants. When nurses have a clear understanding of ADs, they have a positive attitude toward ADs and can educate patients on information related to ADs with accuracy, which can help patients make the decision to receive life-sustaining treatment [27].

In the analysis of the participants' knowledge regarding ADs according to their general characteristics, significant differences in the participants' awareness of the AD system, the need for the AD system, the number of patient deaths per month,

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and experience explaining ADs were observed. The participants had different knowledge levels regarding ADs based on their awareness of the AD system, and the same results were observed in a study conducted with tertiary general hospital nurses [28]. Nurses with high awareness of ADs are believed to be knowledgeable about ADs because they understand the importance of delivering information about ADs [28]. This suggests that nurses know better than anybody that they should maintain an accurate knowledge and understanding of ADs in order to provide patients and guardians with accurate information on ADs when writing them. Those who answered the AD system was not necessary were the most knowledgeable about the AD system. This differs from the results of a previous study [25] that found that those with more knowledge about ADs tended to consider ADs to be more necessary. In addition, those who experienced two or more patient deaths per month were more knowledgeable about ADs. When providing end-of-life care and frequently experiencing the deaths of elderly patients, nurses at long-term care hospitals act as coordinators of opinions and intervenors between guardians and doctors in charge. In other words, they are advocates for guardians and counselors who can give explanations regarding ADs [29]. Explanations of the AD system are often included in these nursing activities. Although most ADs in the past were written in hospitals [2], an increasing number of patients produce ADs that they write in advance when admitted to a hospital, and since a majority of medical professionals make decisions according to patients' will or wishes [2], ADs function as systematic instruments. Moreover, the completion of ADs based on detailed and sufficient explanations from medical professionals encourages patients to reflect their will in treatment plans and increases the reliability of medical professionals [27]. Systematic training is believed to be necessary for nurses at long-term care hospitals to act as educators who provide patients and families with accurate information through professional training on ADs.

The analysis of the differences in nurses' experience levels regarding ADs according to their general characteristics showed that there were significant differences according to awareness of the AD system, the need for the AD system, and experience explaining ADs. Those who knew a lot or a little about ADs had more experience with ADs; the respondents' experience with ADs seemed to confer more knowledge, which is similar to the results of a study conducted with nurses who worked at general hospitals [9]. Since it is important for patients to make end-of-life decisions according to their own will, it is an important role of nurses to educate patients on ADs and encourage them to write ADs in order to ensure that the AD system is implemented properly [3]. According to a 2010 study investigating the attitudes of nurses regarding decisions for end-of-life treatment and ADs [15], nurses had little experience with ADs, and their confidence in helping patients' decision-making regarding ADs was generally low. A study by Cho [13] found that, while university hospital nurses mainly cared for or provided counseling to patients who wrote ADs, few of them actually participated in the decision-making process related to ADs.

The analysis of nurses' attitudes regarding ADs according to their general characteristics identified differences by experience, awareness of the AD system, the need for the AD system, and experience explaining ADs. Those with 20+ years of experience had a more positive attitude toward ADs, which corresponds to the results of previous studies [8,12]. In particular, nurses with 15 or more years of work experience, head nurses, and charge nurses were more aware of the AD system and had a more positive attitude toward ADs than general nurses [9,12]. This result is similar to the finding that clinical nurses acquire most information about ADs through experience [12]. As nurses build experience and are promoted through the ranks, they face relatively more opportunities to encounter ADs, and as their work proficiency increases [27], they can better encourage patients to complete ADs to discontinue undesired life-sustaining treatment by controlling patients' clinical symptoms and assist them in exercising their right to self-determination [8].

The analysis of the correlation between the knowledge, experience, and attitudes of nurses regarding ADs showed that a higher level of knowledge regarding ADs correlated to a higher degree of experience and a more positive attitude regarding ADs. Compared to general hospital nurses in prior studies [3,8], nurses at long-term care hospitals in this study were more knowledgeable about ADs but had less experience with them. This suggests that nurses at long-term care hospitals insufficiently carry out their roles as advocates, counselors,

and coordinators for patients in end-of-life care, including encouraging them to complete ADs, in the actual nursing environment. In previous studies [3,8], nurses with more AD experience were more knowledgeable about ADs and had more positive attitudes toward ADs [3,8]. In order for nurses to help patients and guardians make the best decisions when they write ADs, nurses should be given training on their role in the decision-making process related to ADs. Such an education program should cover the basic concepts regarding ADs, enable them to deliver accurate information about the process of writing ADs, and include content that can increase direct and indirect experiences while writing ADs.

In conclusion, in this study, nurses at long-term care hospitals generally had a high level of knowledge about ADs, which led to having more positive attitudes about ADs. However, they had little experience with ADs. Therefore, the competency of nurses regarding ADs should be enhanced through on-the-job training that increases their direct and indirect experience with ADs. Since no prior domestic or international studies have examined the knowledge, experience, and attitudes of nurses at nursing hospitals regarding ADs, there are limitations to determining the causality between variables, directly comparing the findings with previous ones, and presenting the study results. This study is meaningful since it identified the knowledge, experience, and attitudes of nurses at long-term care hospitals regarding ADs to provide basic data for the development of educational programs related to ADs. Based on the above study results, we propose further studies to examine the knowledge, experience, and attitudes of general nurses regarding ADs, develop nursing education programs related to ADs that reflect the implementation of the Act on Decisions on Life-sustaining Treatment, and compare the knowledge, experience, and attitudes of doctors and nurses regarding ADs to determine causality between relevant variables.

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: GEP. Data analysis and interpretation: all authors. Drafting the article: GEP. Critical revision of the article: all authors. Final approval of the version to be published: all authors.

SUPPLEMENTARY MATERIALS

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