BMC Nursing

RESEARCH

Open Access

Effectiveness of a simulation programme with lectures about end-of-life care using a standardised patient: a quasi-experimental study

Sunyoung Son[1,4], Deulle Min[2] and Suhee Kim[3*]

Abstract

Background End-of-life and hospice care simulation training is an effective training method for nursing students who rarely have first-hand experience in the clinical placement environment. A systematic debriefing is crucial to maximise the effect of simulation training. This study compared the hospice-related knowledge, attitudes, and confidence of nursing students with exposure to a simulation programme with lectures on end-of-life care using a standardised patient (SIwithLE) to those with exposure to a simulation-only programme on end-of-life care using a standardised patient (SIMUL).

Methods This quasi-experimental study was conducted at a nursing school in South Korea. Forty-nine senior nursing students participated in pre- and post-tests to measure their knowledge of hospice and palliative care, attitudes towards caring for terminally ill patients, and confidence in end-of-life care.

Results Knowledge increase was observed not only within the group (experimental group) but also between groups and for interaction between group and time. Attitude significantly improved at post-test in both groups. Significant differences regarding confidence were observed neither within/between groups nor for interaction between group and time.

Conclusions SIwithLE was verified to be an efficient programme for enhancing students' knowledge of hospice and palliative care and positively changing their attitudes towards caring for terminally ill patients.

Keywords Hospices, Simulation training, Lecture, Knowledge, Attitude, Quasi-experimental study

*Correspondence:
Suhee Kim
shkim8312@hallym.ac.kr
[1]Department of Surgery, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul 06273, Republic of Korea
[2]Department of Nursing, College of Medicine, Wonkwang University, 460, Iksandae-ro, Iksan 54538, Jeonbuk, Republic of Korea
[3]School of Nursing and Research Institute of Nursing Science, Hallym University, 1 Hallymdaehak-gil, Chuncheon- si 24252, Gangwon-do, Republic of Korea
[4]College of Nursing Yonsei University, Seoul, Republic of Korea

Background

Good care for terminally ill patients includes managing pain and symptoms, the patient's awareness of death, and maintaining patients' dignity [1]. Especially for older adults, this includes being able to die in their own home with family support [2]. The Korean government announced the Community Integrated Care Master Plan in November 2018. The Master Plan's main content is to promote chronic disease and integrated health management projects centred on local public health centres and home hospices [3]. Home hospice care reduces medical costs through effective symptom management at home and provides more intimate and stable care [4].

Dying patients and their families need high-quality end-of-life care that can help them better cope with various physical, psychological, and spiritual difficulties [5]. Professional end-of-life care should be able to ease symptoms of depression, anxiety, and stress in patients and their families caused by imminent death [6]. However, new graduates in their first year of clinical practice feel stressed when caring for such families [7, 8], highlighting the necessity of direct experience with end-of-life situations and hospice placement for nursing students.

Owing to the COVID-19 pandemic's effects on the education sector, clinical placements that used to be conducted in clinical settings have been replaced by on-campus or online practical training. Simulation is an education and training tool designed to allow nursing students to experience and learn clinical cases in a safer environment [9]. This provides opportunities for nursing students to solve problems in clinical situations, improve their clinical performance and situational judgement ability, and evaluate learning outcomes [10]. Debriefing by the instructor is considered a key factor because it helps students reconstitute the expressions exhibited during the scenario, recapitulate existing knowledge to solve problems through reasoning patterns and cognition [11], verbalise their behaviour, express the theories underlying their actions [12], recognise errors, and improve knowledge and skills [13]. A wide range of debriefing techniques are available for different users, times, and media, and their efficacy varies [9].

A previous study confirmed the positive effect of combining lecture and simulation education on nursing students [14]. However, it was difficult to distinguish and understand the effects of lectures and simulations as it was conducted without a control group. Thus, this study aims to demonstrate the efficacy of a hospice nursing simulation programme with a focus on debriefing efficacy by integrating an additional learning process afterwards.

This study aimed to compare the hospice-related knowledge, attitude, and confidence between an experimental group exposed to the proposed 'simulation programme with lectures about end-of-life care using a standardised patient (SIwithLE)' and a control group exposed to a comparison programme, 'simulation-based programme about end-of-life care using a standardised patient (SIMUL)'.

H1 The experimental group will show a greater increase in hospice-related knowledge than the control group.

H2 The experimental group will show more positive attitudes towards hospice care than the control group.

H3 The experimental group will show a greater increase in hospice-related confidence than the control group.

Methods

Research design

This quasi-experimental study used a pretest-posttest design.

Setting and participants

Participants were final-year nursing students in City C who understood the study's purpose and agreed to participate. Considering that hospice nursing presupposes knowledge and skills regarding various diseases, symptoms, and nursing details, the participants were seniors, and the study was conducted in the second semester. The inclusion criteria were adults (≥ 19 years) capable of communication and Korean reading comprehension, reading and signing the consent form, fully understanding the study's purpose and process, and consenting to participate in this study. The only exclusion criterion was prior exposure to hospice lectures. When performing an independent t-test, the number of participants was calculated using G*Power software, which resulted in power (1-β) = 0.80, significance level (α) = 0.05 (one-tailed), and effect size (δ) = 0.80. Although 21 participants per group were required for hypothesis testing, 25 students were recruited for each group considering the typical dropout rate. With one withdrawal in the control group, the final numbers of participants in the experimental and control groups were 25 and 24, respectively. Participants were randomly assigned to either the experimental or control group using a computer and were blinded from knowing which group they were assigned.

Development of the simulation programme

Development of prior learning materials for simulation practice

Self-directed learning materials to be provided to the participants prior to administering the intervention programmes were developed based on the continuing education materials provided by the Korean Nursing Association, the cancer pain management guidelines released by the National Cancer Center, and

hospice-related textbooks [15, 16]. The materials consisted of a glossary of hospice and palliative care (the definition of hospice palliative care, philosophy, recipients), patient and pain management (types of pain, pain assessment methods, pain management methods: analgesics, analgesic supplements, non-pharmacological therapies, examples of misconceptions about pain, physical symptoms other than pain), and sociopsychological-spiritual nursing (psychological reactions to death).

Development of the simulation scenario

The simulation scenario comprised content suitable for the participants and was selected after being validated by hospice nurses and nursing school professors. A standardised patient (SP) was selected to maximise immersion. The scenario's running time was set to 15 min (Table 1).

The same SP was employed in both the experimental and control groups. In a pre-intervention meeting, the participants were informed of a detailed scenario situation (i.e., a terminal cancer patient in her late twenties living at home).

Development of debriefing questions and hospice lectures

Debriefing is a stage in which trainees analyse and discuss their performance after simulation. In this study, the control group was provided with general debriefing questions: 'What was the subject's situation?', 'What did you do best and what was difficult?', 'What activities did you determine should be performed first to solve the patient's problem?', 'Can you apply what you have learned to real-life situations?', 'If you had to pick the one most important thing you learned today, what would it be?' The debriefer, the nursing school professor, provided students with the opportunity to reflect on hospice patients' pain, physical, psychological, social, and spiritual assessment, intervention, and effective communication through the questions mentioned above. The experimental group had general debriefing time by the debriefer and lectures delivered by a nurse with experience in hospice nursing.

The researcher reviewed the hospice nursing simulation scenario with two hospice nurses, established a lecture plan, and set the content according to the expected content-based nursing intervention to develop lectures reinforcing reflective learning. The lectures consisted of main topics (i.e. the definition of the role of hospice nurses, multidisciplinary team's communication with hospice patients, pain management, non-pain symptom management) and related cases (see Supplementary Material 1).

Procedures

A preliminary survey was conducted with both groups three days before the simulation, wherein prior learning content was provided for self-directed learning. The participants were then randomly assigned to the experimental or control groups. On completion of the simulation training of both groups, a general debriefing was given to the control group and a general debriefing with added lectures to the experimental group, followed by the post-test. The control group was then provided with the SIwithLE video programme for self-directed learning for a week (Fig. 1). The simulation training provided to each group ran for 15 min, and the general debriefing lasted approximately 15 min. The hospice lectures provided to the experimental group lasted 50 min in total.

Table 1 The simulation scenario

Theme	Hospice nursing
Learning outcomes of scenario interventions	1. Knowing how to assess the conditions of hospice patients. 2. Providing hospice patients with appropriate care according to priorities. 3. Explaining pain management to hospice patients. 4. Providing patients/caregivers with information and therapeutic communication.
Scenario	You are a visiting nurse affiliated with a community health centre in City C. The patient is a 27-year-old woman who was diagnosed with cervical cancer in September 2018. She has a history of repeated surgery, chemotherapy, recurrence, radiation therapy, and metastasis. On September 8, 2020, she was given six months to live and her treatment was discontinued. With the anti-cancer treatment stopped, she came back home after discharge to spend her remaining time at home. She is using an indwelling urinary catheter due to the damage to her bladder and sphincter while receiving chemo and radiation treatment. You visit her every other week to provide care. Today, on November 12, you are supposed to change the catheter tube. The patient was notified of the visit yesterday, and you are visiting her today at 9 o'clock in the morning with four other nursing trainees.
Prior nursing skills	• Vital sign measurement (core basic nursing skills) • Indwelling catheterisation (core basic nursing skills) • Pain assessment method
Prior nursing knowledge	• Hospice patient assessment (physical, psychosocial, and spiritual needs) • Hospice patient care (symptom management) • End-of-life and bereavement care

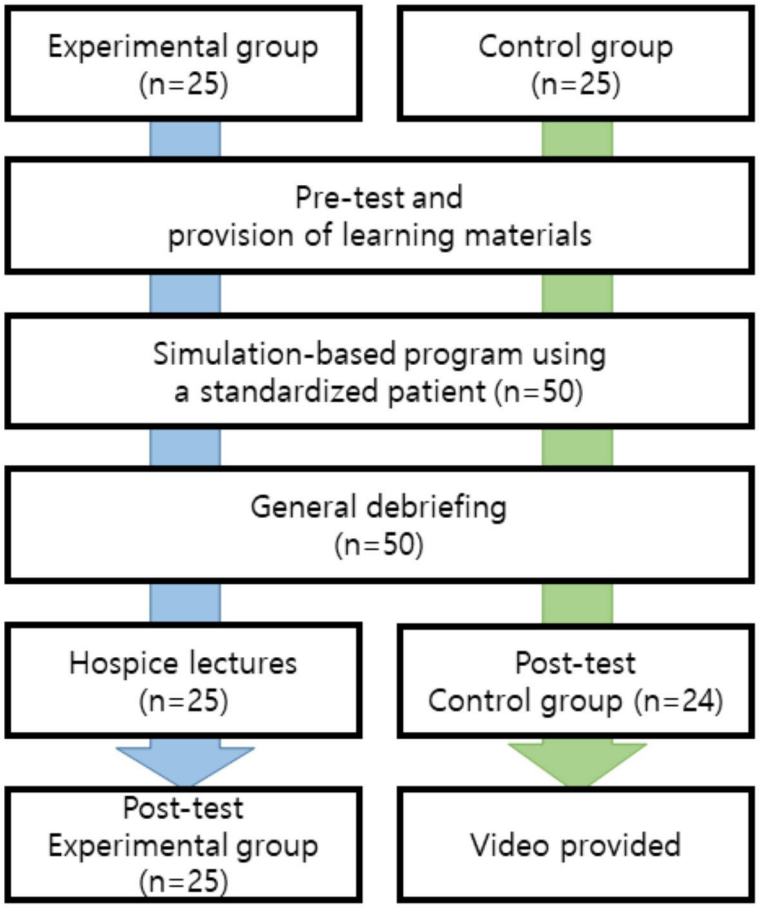


Fig. 1 Research flow

Data collection and ethical considerations

The data were collected in November 2020. Participant recruitment began after obtaining approval from the Institutional Review Board (IRB) of University H (HIRB-2020-073) by posting the research purpose, research period, number of recruits, conditions, and contact details on the bulletin board of the website of the School of Nursing of University H. Since the participants were students, that is, vulnerable subjects, the following protection measures were taken. A co-researcher explained the study's purpose, and recruits' signed informed consent was unrelated to their classes. Additionally, recruits' names were initialised to prevent identity exposure. During the explanation to obtain consent, recruits were informed about confidentiality and anonymity, that non-participation would not result in any disadvantages, and that they could request discontinuance of participation at any time.

Study variables and instruments

Knowledge of hospice and palliative care

We used the Palliative Care Quiz for Nursing (PCQN) developed by Ross et al. [17], adapted by Kim et al. [18], and modified by Kim and Chung [19], and its Korean reliability and validity study was conducted. This 20-item quiz consists of three domains: philosophy and principles (4 items), control of pain and other symptoms (13 items), and psychosocial aspects (3 items). Each item is answered with true or false. One point is assigned to each correct answer and zero to each wrong answer. Total

scores range between 0 and 20, and higher scores indicate higher levels of knowledge. While Kim and Chung corrected the answer to Item 5 to 'False' to reflect the sentiment of the Korean culture, we retained the original answer (True) [19].

Attitudes towards caring for terminally ill patients

Nurses' attitudes towards caring for terminally ill patients were assessed using the Frommelt Attitude Towards Care of the Dying (FATCOD) scale developed by Frommelt [20] and modified by Lee and Lee [21], and its Korean reliability study was conducted. While the original FATCOD consists of 30 items, the Korean FATCOD modified by Lee and Lee consists of 25 items after deleting overlapping items [21]. These items designed to measure nurses' attitudes towards caring for terminally ill patients are divided into 18 items regarding attitude towards the patient and 7 items towards family members. Each item is rated on a 3-point scale (1 = *disagree*, 2 = *neutral*, 3 = *agree*), and higher scores indicate a more positive attitude towards hospice.

Confidence in end-of-life care

For the measurement of confidence in end-of-life care, which may be defined as a positive self-assessment of end-of-life care performance, we used the confidence scale developed by Moreland et al. [22] and modified by Jeong and Choi [23], and its Korean reliability study was conducted. It is a 6-item tool rated on a 6-point scale (1 = *not confident at all*, 6 = *very confident*). Total scores range from 6 to 36, and higher scores indicate a higher confidence level.

General characteristics

To ensure the homogeneity of the experimental and control groups, we examined the following general characteristics by group: age, sex, religion, satisfaction with nursing studies, grade point average (GPA), experience with end-of-life care for a close one, and experience with an end-of-life situation in the previous six months.

Data analysis

The data were analysed using SPSS/WIN 21.0 in the following order:

1) Participants' general characteristics were analysed and presented as the frequencies and percentages, as well as the means and standard deviations.
2) The homogeneity of the general characteristics, knowledge, attitude, and confidence between the experimental and control groups was analysed using independent *t*-tests and chi-square tests.
3) Hypotheses for the knowledge, attitude, and confidence of the experimental and control groups were tested using independent *t*-tests, paired *t*-tests, and generalised estimating equations.

Results

Tests of homogeneity between experimental and control groups

Among the participants' general characteristics, the mean age of the experimental and control groups was homogeneous at 22.52 (*SD* = 1.33) and 22.25 (*SD* = 11.07), respectively. The proportion of male students was 8.0% (*n* = 2) for the experimental group and 12.5% (*n* = 3) for the control group. A comparison of the general characteristics, characteristics related to nursing studies, and those related to the experience of end-of-life care between the experimental and control groups verified the overall homogeneity of both groups, without any variables showing statistically significant intergroup differences (Table 2).

Table 2 Participants' demographics

Characteristics		Experimental group (*n* = 25)	Control group (*n* = 24)	t or χ2	*p*
		M (SD) or *n* (%)	M (SD) or *n* (%)		
Age (years), *M* (*SD*)		22.52 (1.33)	22.25 (1.07)	-0.78	0.439
Sex, *n* (%)	Male	2 (8.0)	3 (12.5)	0.00	0.962
	Female	23 (92.0)	21 (87.5)		
Religion, *n* (%)	Yes	11 (44.0)	15 (62.5)	1.02	0.312
	No	14 (56.0)	9 (37.5)		
Satisfaction with nursing studies, *n* (%)	Yes	16 (64.0)	14 (58.3)	0.01	0.909
	No	9 (36.0)	10 (41.7)		
GPA, *n* (%)	< 3.5	5 (20.0)	6 (25.0)	0.01	0.939
	≥ 3.5	20 (80.0)	18 (75.0)		
Experience with end-of-life care, *n* (%)	Yes	8 (32.0)	8 (33.3)	0.00	0.999
	No	17 (68.0)	16 (66.7)		
Experience with an end-of-life situation in the previous six months, *n* (%)	Yes	6 (24.0)	8 (33.3)	0.17	0.684
	No	19 (76.0)	16 (66.7)		

Note. M: Mean, SD: Standard deviation, GPA: Grade point average

Changes in hospice-related knowledge, attitude, and confidence of the experimental and control groups

The experimental group's knowledge increased significantly after the intervention (post-test) compared to the baseline (pre-test: t = -6.96, $p < .001$). In the experimental group, there was a statistically significant increase in all three hospice-related sub-areas (Philosophy and principles, Management and control of pain and other symptoms, and Provision of psychosocial and spiritual care). Contrastingly, in the control group, there was no statistically significant difference in all three sub-domains related to hospice knowledge. As a result of comparing the experimental and control groups in terms of change in hospice knowledge before and after the intervention, there was no difference before the intervention, but after the intervention, the experimental group was statistically significantly higher than the control group (t = -4.56, $p < .001$).

Statistically significant increases were observed in the attitude scores of both groups at post-test vs. pre-test (t = -4.34, $p < .001$; t = -4.34, $p < .001$). Looking more specifically at the two sub-domains of attitude, both the experimental and control groups had high scores after the intervention. However, there was no difference in attitude scores between the experimental and control groups both before and after the intervention.

Confidence in end-of-life care increased in both groups but without statistical significance (Table 3; Fig. 2).

Time-dependent changes in hospice-related knowledge, attitude, and confidence between groups

Generalised estimating equations were used to determine the time-dependent differences between the groups. Knowledge showed differences between the groups (Wild $\chi^2 = 4.51$, $p = .034$), between pre-test and post-test (Wild $\chi^2 = 22.33$, $p < .001$), and the interaction between group and time (Wild $\chi^2 = 28.15$, $p < .001$). Attitudes towards caring for terminally ill patients changed over time (Wild $\chi^2 = 38.97$ $p < .001$), but no interactions were observed between groups and between group and time. Regarding confidence in end-of-life care, no statistically significant changes were observed between groups, in post-test vs. pre-test comparisons, or for interaction between group and time (Table 4).

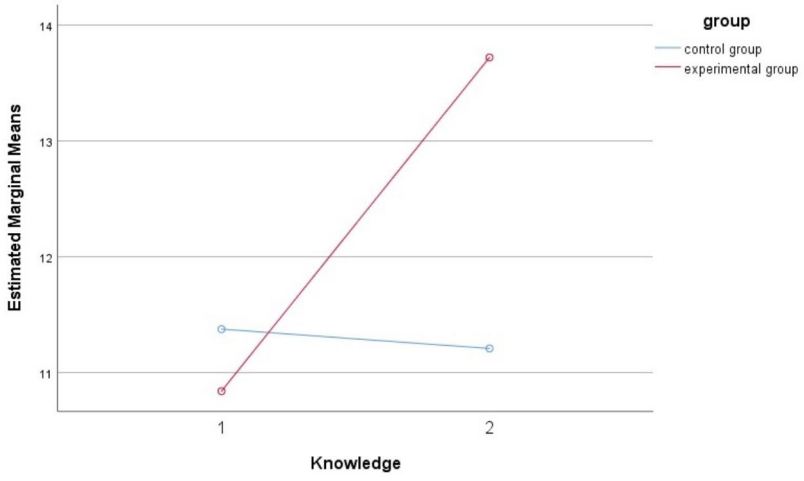
Discussion

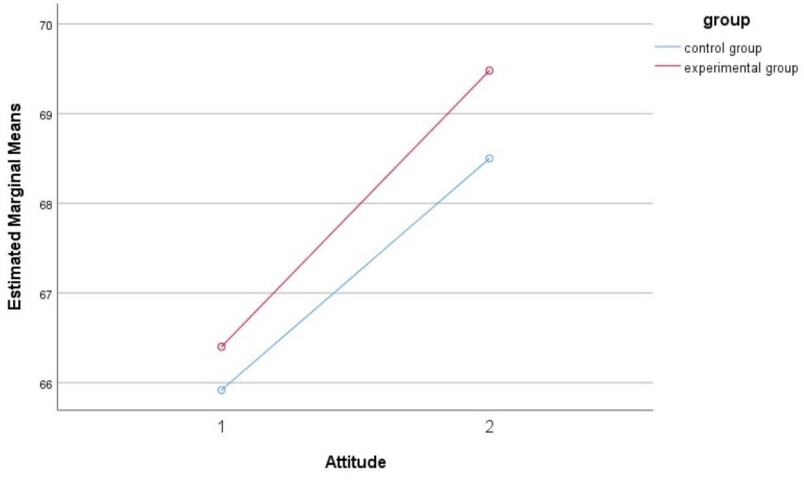
In this study, a simulation programme combined with lectures (SIwithLE) was developed and administered to senior nursing students. The experimental group showed a significant increase in knowledge of hospice and palliative care than the control group; nursing students' attitudes towards caring for terminally ill patients

Table 3 Comparisons of knowledge, attitude, and confidence between two groups

Variables		Pre-test M (SD)	Post-test M (SD)	Paired t	*p*
Knowledge	Exp ($n = 25$) Total	10.84 (1.91)	13.72 (1.86)	-6.96	< 0.001
	Philosophy and principles	1.84 (0.97)	2.60 (0.65)	-3.76	0.001
	Management and control of pain and other symptoms	7.96 (1.21)	9.32 (1.57)	-3.99	0.001
	Provision of psychosocial and spiritual care	1.04 (0.73)	1.80 (0.41)	-4.88	< 0.001
	Cont ($n = 24$) Total	11.38 (2.04)	11.21 (2.00)	0.40	0.692
	Philosophy and principles	1.71 (0.81)	1.83 (1.01)	-0.77	0.450
	Management and control of pain and other symptoms	8.42 (1.41)	8.21 (1.18)	0.58	0.570
	Provision of psychosocial and spiritual care	1.25 (0.79)	1.17 (0.87)	0.53	0.604
	Total score t(*p*)	0.95 (0.348)	-4.56 (< 0.001)		
Attitude	Exp ($n = 25$) Total	66.40 (4.66)	69.48 (3.71)	-4.34	< 0.001
	Patient-centred dimension	46.20 (4.52)	48.80 (3.64)	-3.727	0.001
	Families-centred dimension	20.20 (0.91)	20.68 (0.69)	-2.613	0.015
	Cont ($n = 24$) Total	65.92 (4.78)	68.50 (4.69)	-4.34	< 0.001
	Patient-centred dimension	46.13 (4.30)	48.04 (4.39)	-2.97	0.007
	Families-centred dimension	19.79 (1.22)	20.46 (1.06)	-3.00	0.006
	Total score t(*p*)	-0.36 (0.722)	-0.81 (0.420)		
Confidence	Exp ($n = 25$)	23.40 (3.06)	24.24 (4.20)	-1.01	0.325
	Cont ($n = 24$)	22.88 (3.79)	23.67 (3.47)	-1.12	0.273
	t(*p*)	-0.54 (0.595)	-0.52 (0.606)		

Note. Exp: Experimental group, Cont: Control group, M: Mean, SD: Standard deviation





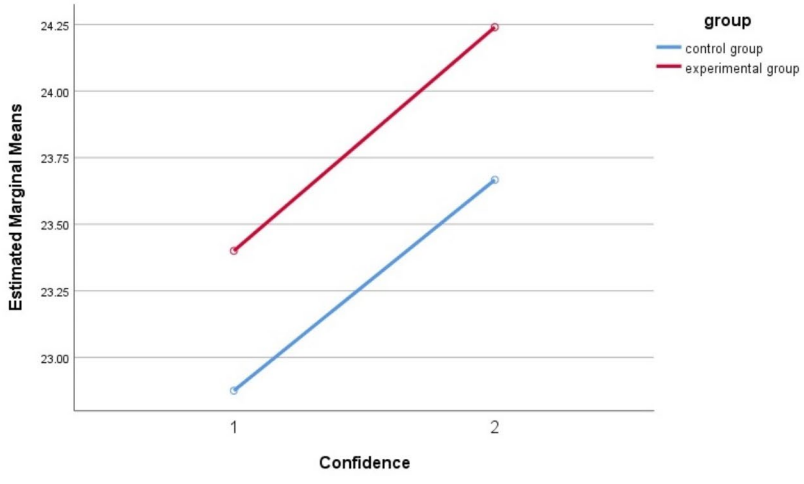


Fig. 2 Changes in knowledge, attitude, and confidence after the intervention

Table 4 Changes in knowledge, attitude, and confidence after the intervention

	Intercept		Group		Time		Group × Time	
Variables	**Wild χ^2**	***p***	**Wild χ^2**	***p***	**Wild χ^2**	***p***	**Wild χ^2**	***p***
Knowledge	13.72	< 0.001	4.51	0.034	22.33	< 0.001	28.15	< 0.001
Attitude	69.48	< 0.001	0.39	0.532	38.97	< 0.001	0.30	0.584
Confidence	24.24	< 0.001	0.40	0.528	2.32	0.128	0.01	0.964

significantly improved for both groups post-intervention; confidence in end-of-life care increased in both groups, however, without statistical significance.

This study revealed that hospice-related knowledge significantly improved in the experimental group, thus supporting H1. Moreover, the interaction between group and time was also statistically significant. These findings align with a study that demonstrated a positive effect of lecture-simulation combined education [14]. As a result of providing a combined lecture and simulation course for 18 h to second and third-year nursing students, all three sub-areas of knowledge (Philosophy and principles, Management and control of pain and other symptoms, and Provision of psychosocial and spiritual care) increased [14]. In this study, the experimental group that received both lectures and simulation practice showed an increase in all three sub-areas. The control group's mean post-test knowledge score did not increase, although learning materials were provided for self-directed learning prior to simulation training. This suggests that self-directed learning of theoretical aspects and practical simulation training alone are insufficient to improve knowledge. This finding is similar to that of a study comparing intensive care unit nurses' learning outcomes between the group exposed to only lectures on end-of-life care and the group additionally exposed to simulation, wherein knowledge improved in both groups with no statistically significant intergroup differences [24]. That is, the knowledge aspect of hospice care can be improved more efficiently by combining simulation training with lectures and debriefing than by simulation alone.

The mean scores for attitudes towards caring for terminally ill patients increased post-intervention in both groups. Both experimental and control groups showed statistically significant increases in both attitude subdomains, attitudes toward terminally ill patients and attitudes toward patients' families, after simulation practice. However, there was no difference in attitude scores between the two groups before and after the intervention. That is, H2 (i.e., the experimental group would show more positive attitudes than the control group) was rejected. Likewise, in a study that provided sophomore nursing students with end-of-life care simulation and measured subsequent changes in attitude, statistically significant positive changes in their attitudes towards hospice were observed [25]. Thus, it can be inferred that simulation is an active and efficient education method for improving nursing students' attitudes towards end-of-life care.

Confidence in end-of-life care increased in both groups, however, without statistical significance. Therefore, H3 (i.e., the experimental group would show a greater increase in confidence in end-of-life care than the control group) was rejected. Similarly, a previous study using debriefing based on the clinical judgement model that was applied to simulation training for prospective nursing graduates reported statistically significant increases in confidence in the experimental group [23]. Participants in this study had 2 to 3 points higher mean pre-test confidence scores than those in the Jeong and Choi study [23]. However, from the post-test increase in confidence of less than one point, it can be assumed that the participants in this study had relatively high confidence in hospice care.

This study has some limitations. First, it has limited generalizability because of its small sample size. Second, although the tools used in this study have been widely used in prior similar studies, they must be interpreted with caution. The knowledge scale contains items contradicting Korean culture and requiring careful consideration in interpretation. Additionally, while the self-directed learning materials provided general knowledge about hospice, the PCQN included questions requiring some professional knowledge. Therefore, it is possible that students who studied only the self-directed learning materials (control group) may have had difficulty answering. In the future, it is necessary to examine the contents of the tool more closely and, if necessary, develop a tool that specifically asks for more general knowledge about hospice. Additionally, the item 'concern about agitation at the end of life' on the confidence of end-of-life care scale was reverse-scored, which may have been confusing for participants. Third, although different spaces were used for each group when administering the intervention and post-test to minimise intergroup interference, perfect environmental control was not possible because the spaces were in the same building, which may have impaired the study's validity. In addition, the Hawthorne effect may have occurred (in terms of attitude and confidence) in the experimental group, which listened to lectures with content different from the prior learning content, even if the participants were not told that they were the experimental group. Finally, the results of this study (in the control group) showed that it was not

effective for students to learn about hospice on their own using prior learning materials (even if the subjects of this study were fourth-year students who had learned the overall content of nursing). Therefore, it is recommended that a follow-up study be conducted in the future by adding methods such as watching video lectures in advance. In addition, in future studies, if a control group (2) is designed such that it is not provided any intervention (not only lectures but also no simulation practice), in addition to the control group and experimental group of this study, the intervention effect will be confirmed more clearly. Despite these limitations, the SIwithLE training programme was effective in improving the knowledge and attitudes of nursing students regarding end-of-life care.

Conclusions

In this study, a simulation programme combined with lectures (SIwithLE) was developed and administered to senior nursing students, and their hospice-related knowledge, attitude, and confidence were assessed. The experimental group exposed to SIwithLE showed a significant increase in knowledge of hospice and palliative care compared to the control group exposed to only SIMUL without additional lectures. In both groups, participants' attitudes towards caring for terminally ill patients became significantly more positive after the intervention; confidence in end-of-life care increased in both groups but was non-significant. Thus, it can be concluded that while simulation training for end-of-life care can positively influence trainees' attitudes towards caring for terminally ill patients, hospice-related knowledge can be obtained more efficiently through lecture-based direct delivery than self-directed learning integrated into the simulation training programme. Attitude and confidence scores increased slightly more in the experimental group than in the control group. This might be attributed to hospice-related knowledge obtained through lectures, which helped the experimental group participants adopt more positive attitudes and feel more confident, but this aspect should be examined and verified empirically. Follow-up research should also compare hospice-related knowledge, attitude, and confidence between simulation training programmes using virtual reality simulation and SPs.

Abbreviations

SIwithLE	Simulation programme with lectures about end-of-life care using a standardised patient
SIMUL	Simulation-based programme about end-of-life care using a standardised patient

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12912-025-02700-1.

Supplementary Material 1

Acknowledgements

The authors thank the hospice nurses and nursing school professors for their contributions to the content used in simulation scenarios.

Author contributions

SK conceptualised the work and all authors contributed to the design of the study. The intervention programme was conducted by SK and SS. All authors contributed to the statistical analysis plan and SK and DM conducted the statistical analysis. All authors contributed to the preparation of the manuscript drafts and reviewed the manuscript.

Funding

This study was funded by the Hallym University Research Fund (HRF-202108-005).

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethical approval and consent to participate

This study protocol was approved by the Institutional Review Board of Hallym University (HIRB-2020-073). All methods were performed in accordance with the relevant guidelines and regulations. Written informed consent was obtained from all study participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 25 July 2023 / Accepted: 8 January 2025
Published online: 03 April 2025

References

1. Granda-Cameron C, Houldin A. Concept analysis of good death in terminally ill patients. Am J Hosp Palliat Med. 2012;29(8):632–9. https://doi.org/10.1177/1049909111434976.
2. Min D, Cho E. Concept analysis of good death in the Korean community. J Korean Gerontol Nurs. 2017;19(1):28–38. https://doi.org/10.17079/jkgn.2017.19.1.28.
3. Ministry of Health and Welfare. Local Community Integrated Care Master Plan. http://www.mohw.go.kr/react/al/sal0301vw.jsp?PAR_MENU_ID=04&MENU_ID=0403&page=2&CONT_SEQ=346683 (2018). Accessed 30 Jan 2023.
4. Park C-S, Yoon S, Jung Y. The status of home-based hospice care in Korea. Korean J Hosp Palliat Care. 2013;16(2):98–107. https://doi.org/10.14475/kjhpc.2013.16.2.098.
5. Caton AP, Klemm P. Introduction of novice oncology nurses to end-of-life care. Clin J Oncol Nurs. 2006;10(5):604–8. https://doi.org/10.1188/06.CJON.604-608.
6. Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. BMJ. 2010;340:c1345. https://doi.org/10.1136/bmj.c1345.
7. Rodrigues AB, Chaves EC. Stressing factors and coping strategies used by oncology nurses. Rev Lat Am Enfermagem. 2008;16(1):24–8. https://doi.org/10.1590/s0104-11692008000100004.
8. Sorensen R, Iedema R. Emotional labour: clinicians' attitudes to death and dying. J Health Organ Manag. 2009;23(1):5–22. https://doi.org/10.1108/14777260910942524.
9. Lee J, Lee H, Kim S, Choi M, Ko IS, Bae J, et al. Debriefing methods and learning outcomes in simulation nursing education: a systematic review and meta-analysis. Nurse Educ Today. 2020;87:104345. https://doi.org/10.1016/j.nedt.2020.104345.

10. Lee WS, Cho KC, Yang SH, Roh YS, Lee GY. Effects of problem-based learning combined with simulation on the basic nursing competency of nursing students. J Korean Acad Fundam Nurs. 2009;16(1):64–72.
11. Wotton K, Davis J, Button D, Kelton M. Third-year undergraduate nursing students' perceptions of high-fidelity simulation. J Nurs Educ. 2010;49(11):632–9. https://doi.org/10.3928/01484834-20100831-01.
12. Lasater K. High-fidelity simulation and the development of clinical judgment: students' experiences. J Nurs Educ. 2007;46(6):269–76. https://doi.org/10.3928/01484834-20070601-06.
13. Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. Med Teach. 2005;27(1):10–28. https://doi.org/10.1080/01421590500046924.
14. Wang Y. Lecture-simulation-combined education improve nursing undergraduates' knowledge and attitude for palliative care. Int J Learn Teach Educ Res. 2020;19(8):81–97. https://doi.org/10.26803/ijlter.19.8.5.
15. National Cancer Center. Cancer pain management guideline v6. https://hospice.go.kr:8444/index.html?menuno=22 (2020). Accessed 30 January 2023.
16. Ro YJ. Hospice & Palliative Care: completion of a Meaningful Life. Seoul: Hyunmoonsa; 2018.
17. Ross MM, McDonald B, McGuinness J. The palliative care quiz for nursing (PCQN): the development of an instrument to measure nurses' knowledge of palliative care. J Adv Nurs. 1996;23(1):126–37. https://doi.org/10.1111/j.1365-2648.1996.tb03106.x.
18. Kim HS, Kim BH, Yu SJ, Kim SH, Park SH, Choi SE, et al. The effect of an end-of-life nursing education consortium course on nurses' knowledge of hospice and palliative care in Korea. J Hosp Palliat Nurs. 2011;13(4):222–9. https://doi.org/10.1097/njh.0b013e318210fdec.
19. Kim YJ, Chung BY. Knowledge of hospice and attitude of care for dying patients in university students. J Kyungpook Nurs Sci. 2012;16(2):20–32.
20. Frommelt KH. The effects of death education on nurses' attitudes toward caring for terminally ill persons and their families. Am J Hosp Palliat Care. 1991;8(5):37–43. https://doi.org/10.1177/104990919100800509.
21. Lee M, Lee WH. Hospice volunteer's attitude toward care of the dying. J Hosp Palliat Care. 2001;4(1):57–67.
22. Moreland SS, Lemieux ML, Myers A. End-of-life care and the use of simulation in a baccalaureate nursing program. Int J Nurs Educ Scholarsh. 2012;9(1). https://doi.org/10.1515/1548-923X.2405.
23. Jeong KI, Choi JY. Effect of debriefing based on the Clinical Judgment Model on simulation based learning outcomes of end-of-life care for nursing students: a non-randomized controlled trial. J Korean Acad Nurs. 2017;47(6):842. https://doi.org/10.4040/jkan.2017.47.6.842.
24. Bodine JL, Miller S. A comparison of lecture versus lecture plus simulation. J Hosp Palliat Nurs. 2017;19(1):34–40. https://doi.org/10.1097/njh.0000000000000302.
25. Dame L, Hoebeke R. Effects of a simulation exercise on nursing students' end-of-life care attitudes. J Nurs Educ. 2016;55(12):701–5. https://doi.org/10.3928/01484834-20161114-07.

Publisher's note