

Effectiveness of a Four-Stage Death Education Model Based on Constructivist Learning Theory for Trainee Nursing Students

Yujing Yang^{1,*}, Yue Li^{2,*}, Jia Fu³, Dan Guo⁴, Jingjing Xue¹

¹Fundamental Nursing Teaching- Research Department, Fenyang College of Shanxi Medical University, Fenyang City, Shanxi Province, 032200, People's Republic of China; ²Academic Affairs Office, Fenyang College of Shanxi Medical University, Fenyang City, Shanxi Province, 032200, People's Republic of China; ³Department of Radiation Oncology, Shanxi Cancer Hospital, Taiyuan City, Shanxi Province, 030013, People's Republic of China; ⁴Department of Research and Teaching, China Aerospace Science and Industry Corporation 731 Hospital, Beijing City, 100074, People's Republic of China

*These authors contributed equally to this work

Correspondence: Yujing Yang, Fundamental Nursing Teaching- Research Department, Fenyang College of Shanxi Medical University, No. 16 Xueyuan Road, Fenyang City, Shanxi Province, 032200, People's Republic of China, Tel +86 18335846366, Email yangyj2024yj@163.com

Objective: To explore the effectiveness of the four-step death education model based on constructivist learning theory in enhancing the death coping abilities and attitudes of trainee nurses and improving course satisfaction.

Methods: Sixty-six trainee nurses from a tumour hospital in Shanxi Province were selected as the study subjects, and a class-experimental research design was adopted, in which the nursing students before the course implementation were taken as the control group and those after the course implementation were taken as the experimental group. Death Attitude Profile Revised Scale (DAP) was used to measure the cognitive attitude of nursing students towards death, and a self-made questionnaire was used to test the satisfaction of nursing students with the curriculum design. Paired sample *t* test was used to compare the participants before and after the study.

Results: Post-course death avoidance score, fear of death score, and escape-orientated death acceptance score of the trainee nurses (all $P < 0.05$) were higher than the control group. Neutral death acceptance score ($P < 0.05$) was lower amongst the trainee nurses than the control group after the course. It showed that the attitudes towards death of the trainee nurses before and after the course improved in terms of fear and anxiety, sense of avoidance, and neutral acceptance. In the evaluation of the content of the course, the teaching methods of the course, and the teaching results, most of the trainee nurses gave a better evaluation.

Conclusion: The four-step death education model based on constructivist learning theory significantly improved the death coping skills and attitudes of trainee nursing students. Although this educational model is still limited, it provides research materials for the future establishment of a systematic death education.

Keywords: constructivist learning theory, death education, placement, nursing students

Introduction

In recent years, with the increasing prevalence of chronic diseases and the aging of the population, more and more patients have died after hospitalization. Nurses are the medical personnel who have the longest contact with dying patients in daily nursing care.¹ Their emotions and attitudes towards death are crucial to the dignity, self-esteem and self-worth of dying patients.^{2,3} Therefore, death education is an important part of nursing education, which aims to help nursing students understand and cope with the emotional impact and professional challenges related to death. However, the experience of caring for dying patients also puts great pressure and challenges on nursing staff.^{4,5} Studies⁶ have shown that nurses tend to avoid discussing death issues with dying patients and their families. In particular, student nurses generally have anxiety and fear in the face of death, resulting in their reluctance to take care of dying patients.^{3,7} Previous studies⁸ have found that most nurses are underprepared for hospice care and have a high demand for death

education, especially for young nurses. As future nurses, nursing students will play an important role in providing palliative care. Their understanding and attitude towards death will directly affect the quality of palliative care services for people on the verge of death in the future. However, for young nursing students, their clinical experience is generally insufficient, and the experience of facing death is even less, so their attitude towards death is challenging.

Since the 1920s, the concept of death education has begun to receive attention. In the United States, Europe and Japan, an education system on death cognition has been formed.^{9,10} In the United States, 52% of medical schools and 78% of nursing schools have set up three credits of death education compulsory courses.¹¹ However, the development of death education in China is not enough. In Chinese traditional culture, the topic of death is relatively taboo,¹² so it was not until the late 1990s that death education started in China. Nursing education still lacks a systematic death education and training system in China. In addition, Chinese people's understanding of death and emotional needs are different from those of foreign countries. Therefore, there is a lack of death education model in line with China's national conditions. It is necessary to explore the establishment of a death education curriculum model in line with Chinese nursing students. Previous studies have shown¹³ that Chinese medical staff have low awareness of palliative care, poor acceptance and low desire to engage in palliative care, which indicates the need to strengthen death education and related research for medical and nursing students.

Traditional models of death education tend to favour the transmission of theoretical knowledge and neglect the holistic cognitive, emotional and vocational skill needs of nursing students in real-life scenarios.¹⁴ This single educational model is difficult to comprehensively improve the coping skills of nursing students and affects their performance in clinical practice.¹⁵ Studies¹⁶ have shown that experiential death education can reduce the death anxiety of the subjects more than theoretical teaching. With the continuous development and improvement of death education programs, film appreciation, simulation, experiential learning and other forms have been widely used in recent years.^{17–19}

In recent years, constructivist learning theory has been widely recognized and applied in the field of education.^{20,21} Constructivist learning theory emphasises that learners actively construct knowledge systems and achieve deep learning through interaction with the environment, practical work and reflection. This theory holds that learning is an active, experience-driven process that is closely related to specific contexts.^{22,23} An educational model based on this theory focuses on contextualised learning and individual experience, and is an effective way to enhance the comprehensive ability of trainee nursing students to cope with death events.²⁴ Therefore, applying constructivist learning theory to death education is expected to address the shortcomings of the traditional education model and provide more comprehensive educational support.

The purpose of this study is to design and implement a four-stage death education model based on constructivist learning theory to test whether the death education is effective in improving nursing students' cognition and attitude towards death'. The model is divided into four stages: hearing death, seeing death, touching death, and transcending death.²⁵ Educational content, theoretical knowledge learning, role-playing and simulation training, clinical practice experience, and reflection and conclusion are arranged in a gradual and in-depth sequence from the four levels. Each stage aims to gradually enhance the intern nursing students' cognition, emotion, skills, and professionalism in the face of death education through different educational tools and strategies. Through this study, we expect to enrich the existing theory and practice of nursing education and to improve the coping and professionalism of trainee nursing students when facing death events in the clinic. At the same time, through continuous feedback during the reflection and conclusion phases, this educational model also provides valuable experience and suggestions for future nursing education, thus ultimately improving the quality of nursing services for the benefit of patients and their families.

Research Objects and Methods

The choice of delivery and content based on the needs of the intervention participants is key to ensuring the effectiveness of the teaching. This study used the four-step model based on constructivist learning theory to conduct death education for nursing students, aiming to test the effectiveness of the model in death education. Through the preliminary research of the group, the teaching design and the selection of teaching content were completed.

Research Objects

This study used before-after control study design, and 66 undergraduate nursing students who were interns at an oncology hospital in Shanxi Province were selected from May 2023 to September 2023 as the study subjects. Before conducting the four-step life education and end-of-life care course as the control group, and after conducting the four-step life education and end-of-life care course as the experimental group, approval from the Ethics Committee of our hospital was obtained prior to the implementation of the interventions (Approval No.: 2,023,042).

Inclusion criteria: (1) nursing students who are practicing; (2) participants informed consent, volunteered to participate in this study.

Exclusion Criteria: (1) participants who do not complete the whole course for special reasons; (2) persons with mental illness; (3) persons with religious beliefs; (4) persons who suffered the death of a father, mother, other close relative, or close friend during the study period; (5) persons who suffered a major life-threatening illness or event during the study period itself.

Using PASS 15.0 sample size calculation software, referring to the previous experimental study²⁶ of nurse death education, the attitude of nurses to take care of dying patients before and after the experimental group in this study was used as an indicator. Since the attitude of nurses to take care of patients was divided into several dimensions, the total score was not recorded. Therefore, after calculating the scores in each dimension, the maximum sample size was used as the final sample size. The bilateral test = 0.05, the test validity was 90%, and the 10% loss rate was considered. Finally, the sample size was calculated to be at least 63 cases.

Research Methods

Instructional Design

Through literature search, expert consultation, questionnaire survey and semi-structured interviews, we conducted in-depth analyses of nurses' attitudes towards death, knowledge of death-related knowledge and hospice knowledge, as well as the current status of death education in hospitals for nursing students. The key links and influencing factors in the design and implementation of the program were screened out, and the educational content was arranged according to the "four-step" model of death education, ie, "hearing death - seeing death - touching death - transcending death", and combined with modern educational and teaching theories and methods to design the educational content. The first draft of the education program was designed in accordance with modern education and teaching theories and methods. On the basis of the experience of constructing and implementing death education models at home and abroad, the influencing factors and key links in the process of constructing the models are screened out in conjunction with the results of previous research. Brainstorming method was used to explore the elements of program design. Participating members of the discussion include hospital medical staff, community managers, teachers, nursing students and so on. On this basis, the framework of the death education program was identified. The death education intervention program was determined after two rounds of expert correspondence.

Instructional Content

A "four-step" model of death education based on constructivist learning theory was implemented for student nurses, including four levels of education: "hearing death, seeing death, touching death, and transcending death".

Hearing Death

Through the teaching of theoretical knowledge, students will acquire basic death-related knowledge, including ethics, law, religion and culture. Specific education contents and activities: ① A lecture was held for about 120 minutes each time. A hospice care expert and ethics professor explained the basic concepts, ethical dilemmas and solutions of hospice care; ② Organize literary reading, recommend classic books and latest research papers to students, such as 'Hospice Care Ethics' and 'How to Deal with Death and Dying' etc., and organize three reading sharing sessions. Each sharing session divides the students into three large groups, each group of about 20 people, so that students can share the feelings of reading books, each sharing session is about 30 minutes; ③ Online courses: Organize students to participate in online open courses (MOOC), and organize collective viewing twice. Each viewing time is 60 minutes. Students are required to

watch all online courses offline. The course has a total of 7 sections, with an average duration of 50 minutes. The content includes the concept of death education, the evolution of the concept of death, the status quo of death education in China and the West, the cultural differences of death, the importance of death education in China and the nursing industry, local funeral etiquette and funeral services.

Seeing Death

Through visual and sensory experiences, students can have a more intuitive experience of death-related scenes and enhance their perceptual knowledge. Specific educational contents and activities: ① Organize to watch documentaries and movies, organize collective viewing of ‘Dancing with Death’ and ‘One Hour Before Dying’ documentaries and movies, each viewing time is about 120 minutes, through the film to show the real end-of-life situation and case, after the end of the activity, the researcher arranges after-school homework, so that the research object writes the personal feelings and insights after the two-stage training, and privately sends it to the data collector within three days; ② Case Sharing Sessions: invite clinical frontline caregivers and doctors to share their end-of-life care experiences, including successful cases and lessons of failures; ③ Visits: arrange for students to visit end-of-life care wards, rehabilitation centers, and funeral parlors to Understand the various aspects of the whole process of death and the social service system.

Exposure to Death

Through simulation and practical activities, students can improve their practical skills and resilience when facing terminal patients and their families. Specific educational contents and activities: ① Role-playing: the students were divided into 12 groups, with 5–6 people in each group. Three different end-of-life care situations were set up, “facing the patient with only 3 months left in life”, “sudden deterioration of the patient’s condition”, “facing the grieving family members”, and the students played the patients, family members and medical caregivers in groups for simulation exercises.; ② Scenario simulation: the students were divided into 12 groups, with 5–6 people in each group. The high-fidelity simulator and simulation equipment were used to create real nursing scenarios, and different types of patients were set up, including terminal cancer patients, end-stage uremia patients, and patients with limited mobility. The students were used as a hospice care team to perform pain management, psychological comfort, treatment and nursing operations for patients; ③ Ward practice: arranging for students to take turns to participate in real end-of-life care wards, the actual operation time is 1 day, under the guidance of professional tutors to carry out the actual operation and experience.

Beyond Death

Through reflection and discussion, students are helped to gain a deeper understanding of death and enhance their professionalism and psychological adaptability. Specific educational contents and activities: ① Reflection journal: encourage students to record their feelings and insights at each stage of education. After each stage of the course, share with members and tutors in the group, and each student shares for 5–10 minutes; ② Group discussion: weekly fixed time group discussion, each discussion time for 60 minutes, around specific topics for in-depth discussion, including “the meaning of death”, “how to face their emotions”, “dying wishes and care”, etc.; ③ Psychological counselling: provide professional psychological counselling resources, such as psychological counselling rooms and group counselling activities, to help students deal with the negative emotions and psychological pressure that may arise during the process of contacting death; ④ Values education: through moral and ethical courses and humanistic education activities, help students build up a correct view of career, life and values.

Evaluation Tools

General Information Questionnaire

The group designed their own general information questionnaire based on the content and purpose of the study, which included general information about the nursing students such as gender, age, religion, and experiences such as family death education.

Death Attitude Profile Revised Scale (DAP)

The scale is a self-assessment tool for assessing individuals' attitudes towards death and is designed to understand the different attitudes and beliefs of individuals towards death in order to provide support in the areas of counselling, end-of-life care and education.^{27,28} The scale consists of the following 5 dimensions: fear of death, avoidance of death, natural acceptance, convergence to acceptance, and escape from acceptance, with a total of 32 entries. The scale is based on a 5-point Likert scale, in which each entry is rated according to the individual's attitude from "completely disagree" to "completely agree", with lower scores indicating that the patient tends to be more in favour of that attitude. The scale was culturally debugged in previous studies.²⁶ The Cronbach's α coefficient of the total scale was 0.875, the Split-half split-half coefficient was 0.864, and the Cronbach's α coefficient of most dimensions was above 0.7. It has good reliability and validity and is suitable for the study of death attitudes of nursing staff in mainland China.

Course Satisfaction Questionnaire

The course satisfaction questionnaire aims to collect students' feedback on the course content, teachers' teaching methods and teaching effects, and provide a basis for course improvement and teaching quality improvement. The questionnaire was designed by the group and was based on a Likert 5-point scale, with 1 indicating very satisfied and 5 indicating very dissatisfied. The three aspects are divided into several problems. In terms of course content, including the satisfaction evaluation of the richness of the course, the practicality of the course, and the logical rationality of the course content. In terms of teachers' teaching methods, including the interest of teaching, the attractiveness of teaching (whether it can improve learning motivation), and the satisfaction evaluation of interaction. In terms of teaching results, including the classroom's understanding of death, the sense of acquisition of course content learning, and whether the course has improved the satisfaction evaluation of nursing students' ability to cope with death'.

Statistical Analysis

Statistical treatment was performed using SPSS 26.0 statistical software, and K-S method was used for normality test. Measurement data satisfying normality were expressed by ($\bar{x} \pm s$), and the comparison of means between two groups was performed by paired-sample *t*-test; counting data were expressed by frequency (n) or rate (%), and the difference was regarded as statistically significant with $P < 0.05$.

Results

General Information

Before and after the course, questionnaires were distributed to all students through the questionnaire star, a total of 73 questionnaires were distributed, 68 questionnaires were recovered, with a recovery rate of 93.15%, 66 valid questionnaires, and an effective rate of 97.06%. The results showed that a total of 66 cases of internship nursing students met the inclusion criteria, of which 8 cases were male and 58 cases were female, all of them were senior nursing students, with an average age of 21.55 ± 2.08 , all of them were Han Chinese and had no religious beliefs. No relatives passed away during the experimental investigation period, and all received a four-step death education course designed based on constructivist learning theory.

Comparison of Attitudes Towards Death Before and After the Course

Before and after the implementation of the course, the intern nursing students attitudes towards death have changed to some extent, which are manifested in the following aspects: ① the reduction of fear and anxiety: the intern nursing students fear of death scores after the course (3.28 ± 0.9139 VS 3.13 ± 0.9455 , $t = -2.211$, $P < 0.05$) were higher than those of the control group, and the nursing students' fear of death has significantly weakened, and they can face death related matters more calmly; ② Reduction of the sense of avoidance: the fear of death scores of the post-course internship nursing students were higher than those of the control group (3.34 ± 0.9313 vs 3.08 ± 0.9312 , $t = -4.227$, $P < 0.001$), and the sense of avoidance was reduced on the whole, even though a small number of the nursing students still rejected the emotion of death; ③ Increase in neutral acceptance: the neutral death acceptance score of trainee nurses after the course (2.21 ± 0.8806 VS 2.40 ± 0.9046 , $t = 2.836$, $P < 0.05$) was lower than that of the control group, and more nursing students

were able to accept death neutrally, agreeing that death is a part of life; ④ Decrease in avoidance behaviour: the escape-orientated death acceptance score of trainee nurses after the course (3.29 ± 0.9647 V 3.16 ± 0.8563 , $t = -2.006$, $P < 0.05$) was higher than that before the course, and nursing students became more open to the topic of death and were able to discuss and face it more openly (Table 1).

Course Satisfaction Survey Status

The results of the course satisfaction survey showed that the probationer nursing students had a high evaluation of the course content, teaching methods and teaching effects. About the satisfaction evaluation of the course content, in terms of the richness of the course, the satisfaction score is 4.65 ± 0.57 , In terms of the practicality of the course, the satisfaction score was 4.38 ± 0.63 , in terms of the logic of the course, the satisfaction score is 4.30 ± 0.72 ; regarding the satisfaction evaluation of the teaching methods of the course, the satisfaction score was 4.62 ± 0.60 in terms of the interest of teaching, and the satisfaction score was 4.56 ± 0.59 in terms of the motivation of the course. In terms of course interactivity, the satisfaction score was 4.50 ± 0.73 ; on the satisfaction evaluation of teaching results, in terms of improving the understanding of death in the classroom, the satisfaction score was 4.50 ± 0.66 , in terms of the sense of acquisition of the course, the satisfaction score was 4.68 ± 0.53 , and in terms of improving the ability of nursing students to cope with death in the course, the satisfaction score was 4.42 ± 0.77 (Table 2).

Table 1 Comparison of the Scores of the Dimensions of Attitudes Towards Death of Nursing Interns Before and After the Course ($\bar{x} \pm s$) Score

Group	Death Avoidance	Fear of Death	Convergence Guidance	Escape-Orientated Death	Neutral Death Accepted
Control group (n=66)	3.08 ± 0.9312	3.13 ± 0.9455	3.32 ± 0.9023	3.16 ± 0.8563	2.40 ± 0.9046
Experimental group (n=66)	3.34 ± 0.9313	3.28 ± 0.9139	3.27 ± 1.0037	3.29 ± 0.9647	2.21 ± 0.8806
t	-4.227	-2.211	1.080	-2.006	2.836
P	<0.001	0.028	0.281	0.045	0.005

Table 2 Survey of Nurse Interns' Satisfaction With the Programme ($\bar{x} \pm s$)

Items	Strongly Agree	Agree	Neutrality	Disagree	Strongly Disagree	$\bar{x} \pm s$
Evaluation of course content satisfaction						
Course content is richness	46 (69.70%)	17 (25.76%)	3 (4.55%)	/	/	4.65 ± 0.57
Course content is practical	30 (45.45%)	31 (46.97%)	5 (7.58%)	/	/	4.38 ± 0.63
Course content is logical	29 (43.94%)	29 (43.94%)	7 (10.61%)	1 (1.51%)	/	4.30 ± 0.72
Satisfaction evaluation of teaching methods						
The Interestingness of Teaching	45 (68.18%)	17 (25.76%)	4 (6.06%)	/	/	4.62 ± 0.60
Courses can increase motivation to study	39 (59.09%)	24 (36.36%)	3 (4.55%)	/	/	4.56 ± 0.59
Classroom interaction	40 (60.61%)	18 (27.27%)	8 (12.12%)	/	/	4.50 ± 0.73
Satisfaction evaluation of teaching results						
Courses is helpful to raise awareness of death.	42 (63.64%)	18 (27.27%)	6 (9.09%)	/	/	4.50 ± 0.66
Gain a sense of learning course content	47 (71.21%)	17 (25.76%)	2 (3.03%)	/	/	4.68 ± 0.53
Courses can improves the ability to cope with death.	37 (56.06%)	22 (33.33%)	5 (7.58%)	2 (3.03%)	/	4.42 ± 0.77

Discussion

The traditional model of death education occupies an important position in medical and nursing education, but its methods and concepts tend to be relatively homogeneous, focusing mainly on the transmission of theoretical knowledge and ignoring the comprehensive needs of learners in practical situations.²⁹ The traditional model of death education is mainly based on classroom lectures that focus on theoretical knowledge in medicine, ethics, psychology and religion. Chapters on death and end-of-life care in medical and nursing textbooks are used, with an emphasis on static knowledge transfer.³⁰ Teachers impart knowledge about death to students through lectures, books and multimedia presentations, and students are mainly passive recipients of information. The course structure is fixed, with less teacher-student interaction and inter-student discussion, and students have fewer opportunities to actively participate and explore.³¹ In the traditional model, fewer actual clinical practice or simulation situations are arranged, and students are unable to experience and operate through real situations, making it difficult for them to remain calm and professional when facing actual death events. At the same time, the model focuses too much on the mastery of knowledge and neglects students' emotional experience and psychological counselling when facing death, which may affect their burnout and psychological health in the long run. Lack of interaction and independent exploration, students' internalisation and application of learning content is weak, and it is easy to have a disconnection between knowledge and skills in actual work.^{32,33}

This study innovatively designed and implemented a four-step death education model based on constructivist learning theory. By comparing the four aspects of death coping skills, death attitudes, course satisfaction, and theoretical knowledge assessment before and after the course, we were able to assess the cognitive, affective, skill, and professionalism competencies of the trainee nurses. The results of the study showed that the number of nursing students who were provided with death education in their families was 18 (27.3%), and the number of those who were not provided with family death education was 48 (72.7%). This data indicated a lack of family death education in China, and most nursing students were only exposed to death education through the school curriculum.

After the four-step death education model course placement nursing students' concept of death avoidance decreased significantly and the difference was statistically significant. It suggests that nursing students can better deal with emotional and philosophical issues related to death through this course, and were guided to face the finiteness of life and the objectivity of death with a healthier attitude, so as to cherish life and understand and respect the importance of life more. The results show that death education can reduce the fear of death among young nursing students. Fear of death is a natural human reaction when faced with the end of life,³⁴ and this fear may be more intense for trainee nurses and medical students. This fear may be even more pronounced in trainee nursing students who need to deal directly with the illness and death of their patients. Group discussions and role-playing in the course design can alleviate students' 'strangeness to death'. Through simulation of communication with patients and family members, students can be effectively guided to train in emotional expression and emotional support skills. In addition, arranging students to participate in hospice care internships also helps them better adapt to professional requirements. In the study, Ma et al³⁵ found that death education based on dealing with sudden death patterns can also significantly reduce death fear and anxiety, which indicates that facing death or dying patients in the early stage can increase students' 'awareness of death' and enhance their acceptance of death.

Convergence orientation, escape orientation, and neutral death acceptance, three dimensions that reflect an individual's cognitive, emotional, and behavioural responses to death.³⁶ Escape orientation refers to an individual's tendency to avoid and deny death and reluctance to think about or discuss death-related topics. It was hoped prior to the curriculum that the four-step death education model course would enable nursing students to gravitate towards the neutral death acceptance dimension, so that nursing students would hold a calm and objective attitude towards death, neither particularly avoiding nor pursuing it.³⁷ The results of this study showed that there was no significant change in tendency orientated death acceptance, a reduction in flight orientated awareness and an increase in neutral death acceptance after the four-step death education model course, and the difference was statistically significant. This is in line with the expected goals of the curriculum and proves that the four-step death education model for trainee nurses based on constructivist learning theory is effective.

From the perspective of constructivist learning theory, this study belongs to situational learning, which promotes communication and reflection among learners in the context, and promotes the active reconstruction of their original knowledge. The high evaluation of course content, teaching methods and teaching effect reflects the rationality and

scientificity of curriculum design. The design of this course is based on students as the main body, which fully reflects the characteristics of the construction of the main body. Through the rich theory combined with the actual learning mode, nursing students can produce corresponding communication and reflection. Nursing as a practical subject content, scene integration is very important for improving nursing skills. In the results of this study, it is found that there are obvious advantages in stimulating learning motivation in this course. On the one hand, constructivism supports students to communicate and collide with each other to just guide students to think. On the other hand, the course includes a large number of practical activities (such as visiting funeral homes, watching movies, etc.) and practical training courses (fake death experience, writing wills, etc.). It is conducive to attracting students to draw on professional knowledge. In addition, the curriculum system of this study is complete, and the intervention practice time is one semester. The previous meta-analysis² results also show that the intervention lasting for more than 2 months is more effective in improving the attitude of nurses and nursing students to death. In the curriculum design of death education, in order to make students fully understand the concept of death, it is necessary to have a long-term curriculum plan, not just through scattered lectures and courses.³⁸

Through this study, we expect to enrich the existing theory and practice of nursing education and improve the coping and professionalism of trainee nursing students when facing death events in the clinic. At the same time, through the continuous feedback in the reflection and summary phase, this educational model also provides valuable experience and builds for future nursing education. Enhancing nurses' death coping ability and adjusting their attitudes towards death have wide application value in actual clinical work and help to provide high-quality end-of-life care services. The ability of nurses to provide nursing care with a calm mind and a professional demeanour when dealing with dead and dying patients can significantly increase the satisfaction of patients and their families and reduce their psychological burden.

There are some limitations in this study. First, the sample size is relatively limited, so the research design is a self-control design before and after, and there are individual differences among the participating nursing students, which may bring some deviations to the research results. Secondly, the evaluation results of curriculum satisfaction are relatively single, which are evaluated by a self-made questionnaire, and the questionnaire is not compared with the traditional curriculum setting, so the advantages of the curriculum are limited. The weaknesses in the curriculum need to be further studied and analyzed, and targeted measures need to be taken to improve them in order to achieve better results in subsequent teaching. Through continuous feedback and optimization, the four-step death education model can be continuously improved and become an important part of nursing education.

Conclusion

This study verified the validity and feasibility of the four-step death education model based on constructivist theory by comparing the death attitudes and course satisfaction of the trainee nursing students before and after the course. Significant changes in the death attitudes of the trainee nurses before and after the course also occurred before and after the course, and the nurses became more calm, open and positive towards death and were able to face and discuss death-related issues more openly. In terms of course satisfaction, more than 80% of the trainee nurses gave high ratings to the course content, teaching methods and effectiveness. Overall, through the four-step death education model, the comprehensive ability of intern nursing students in coping with death events was significantly improved. Through a systematic educational approach, the course not only enhanced the professional knowledge and skills of the nursing students, but also improved their emotional experience and psychological state, which is of great significance to the provision of high-quality end-of-life care services.

Data Sharing Statement

All data generated or analysed during this study are included in this article. Further enquiries can be directed to the corresponding author.

Ethics Approval and Consent to Participate

This study was conducted in accordance with the Declaration of Helsinki and approved by the ethics committee of Fenyang College of Shanxi Medical University (2023042). Written informed consent was obtained from all participants.

Funding

The study is supported by Construction of life and death education model for medical students under the background of the scientific research project “Healthy China 2030” of Fenyang College of Shanxi Medical University (2022C28); and Effectiveness of a four-stage death education mode based on constructivist learning theory for trainee nursing students of Fenyang college of Shanxi Medical University(FJ2024009).

Disclosure

The authors have no personal, financial, commercial, or academic conflicts of interest.

References

1. Martins PS, Hernández-Marrero P, Pasman HR, et al. Nursing education on palliative care across Europe: results and recommendations from the EAPC Taskforce on preparation for practice in palliative care nursing across the EU based on an online-survey and country reports. *Palliat Med*. 2021;35(1):130–141. doi:10.1177/0269216320956817
2. Chua JYX, Shorey S. Effectiveness of end-of-life educational interventions at improving nurses and nursing students’ attitude toward death and care of dying patients: a systematic review and meta-analysis. *Nurse Educ Today*. 2021;101:104892. doi:10.1016/j.nedt.2021.104892
3. Xu F, Huang K, Wang Y, et al. A Questionnaire Study on the Attitude towards Death of the Nursing Interns in Eight Teaching Hospitals in Jiangsu, China. *Biomed Res Int*. 2019;2019:3107692. doi:10.1155/2019/3107692
4. Su FJ, Zhao HY, Wang TL, et al. Death education for undergraduate nursing students in the China Midwest region: an exploratory analysis. *Nurs Open*. 2023;10(12):7780–7787. doi:10.1002/nop2.2025
5. Zahran Z, Hamdan KM, Hamdan-Mansour AM, et al. Nursing students’ attitudes towards death and caring for dying patients. *Nurs Open*. 2022;9(1):614–623. doi:10.1002/nop2.1107
6. Ay MA, Öz F. Nurses attitudes towards death, dying patients and euthanasia: a descriptive study. *Nurs Ethics*. 2019;26(5):1442–1457. doi:10.1177/0969733017748481
7. Abu-El-Noor NI, Abu-El-Noor MK. Attitude of Palestinian Nursing Students Toward Caring for Dying Patients: a Call for Change in Health Education Policy. *J Holist Nurs*. 2016;34(2):193–199. doi:10.1177/0898010115596492
8. Tüzer H, Kirca K, Özveren H. Investigation of Nursing Students’ Attitudes Towards Death and Their Perceptions of Spirituality and Spiritual Care. *J Relig Health*. 2020;59(4):2177–2190. doi:10.1007/s10943-020-01004-9
9. Yoong SQ, Wang W, Seah ACW. Nursing students’ experiences with patient death and palliative and end-of-life care: a systematic review and meta-synthesis. *Nurse Educ Pract*. 2023;69:103625. doi:10.1016/j.nepr.2023.103625
10. D’Antonio J. End-of-Life Nursing Care and Education: end-of-Life Nursing Education: past and Present. *J Christ Nurs*. 2017;34(1):34–38. doi:10.1097/CNJ.0000000000000338
11. Wass H. A perspective on the current state of death education. *Death Stud*. 2004;28(4):289–308. doi:10.1080/07481180490432315
12. Pun JKH, Cheung KM, Chow JCH, Chan WL. Chinese perspective on end-of-life communication: a systematic review. *BMJ Support Palliat Care*. 2020. doi:10.1136/bmjspcare-2019-002166
13. Shishuang Z, Jia C. Research progress on the attitude of nursing students to death and its influencing factors. *China Nursing Education*. 2019;16(01):70–74.
14. Zhu Y, Bai Y, Wang A, et al. Effects of a death education based on narrative pedagogy in a palliative care course among Chinese nursing students. *Front Public Health*. 2023;11:1194460. doi:10.3389/fpubh.2023.1194460
15. F Li, C Hu, B Xu, L Sun. Research progress on death education methods of nursing staff at home and abroad. *Chin Nurs Res*. 2019;33(20):3559–3562.
16. Shea ER, Mager D. End-of-life nursing education: enhancing nurse knowledge and attitudes. *Appl Nurs Res*. 2019;50:151197. doi:10.1016/j.apnr.2019.151197
17. Testoni I, Ronconi L, Palazzo L, Galgani M, Stizzi A, Kirk K. et al. Psychodrama and Moviemaking in a Death Education Course to Work Through a Case of Suicide Among High School Students in Italy. *Front Psychol*. 2018;9:441. doi:10.3389/fpsyg.2018.00441
18. Shaw PA, Abbott MA. High-fidelity simulation: teaching end-of-life care. *Nurse Educ Today*. 2017;49:8–11. doi:10.1016/j.nedt.2016.10.014
19. Gillan PC, van der Riet PJ, Jeong S. End of life care education, past and present: a review of the literature. *Nurse Educ Today*. 2014;34(3):331–342. doi:10.1016/j.nedt.2013.06.009
20. Lebois LAM, Wilson-Mendenhall CD, Simmons WK, et al. Learning situated emotions. *Neuropsychologia*. 2020;145:106637. doi:10.1016/j.neuropsychologia.2018.01.008
21. Arsalidou M, Pascual-Leone J. Constructivist developmental theory is needed in developmental neuroscience. *NPJ Sci Learn*. 2016;1(1):16016. doi:10.1038/npjscilearn.2016.16
22. Chen M, Gu HR, Guan YJ, et al. Application of constructivism learning theory in the teaching of operating nursing. *J Nurs Sci*. 2017;32(8):10–13. doi:10.1186/1748-5908-9-54
23. Gao W, Xu BY, Wu G. *Research on Constructivist Education*. Beijing: Education Science Press; 2008.
24. Clark KR. Learning Theories: the constructivism. *Radiol Technol*. 2018;90(2):180–182.
25. Kala S, Isaramalai SA, Pohthong A. Electronic learning and constructivism: a model for nursing education. *Nurse Educ Today*. 2010;30(1):61–66. doi:10.1016/j.nedt.2009.06.002
26. Tang L, Lingjun Z, Yuxiang L, et al. Study on the construction of continuing education curriculum for ‘death education nurses’. *Journal of Nursing*. 2015;22(14):1–7.
27. Wong PTP, Reker GT, Gesser G. Death Attitude Profile—Revised: a Multidimensional Measure of Attitudes Toward Death. *Death Anxiety Handbook: research, Instrumentation, and Application*. In: *Series in Death Education, Aging, and Health Care*. Philadelphia, PA: Taylor & Francis; 1994:121–148.

28. Satıcı B, Gocet-Tekin E, Deniz ME, et al. Adaptation of the Fear of COVID-19 Scale: its Association with Psychological Distress and Life Satisfaction in Turkey. *Int J Ment Health Addict*. 2021;19(6):1980–1988. doi:10.1007/s11469-020-00294-0
29. Qin ZY, Wang XR, Zheng SY, et al. Visualisation and analysis of research hotspots in death education for nursing students at home and abroad. *Journal of Nursing*. 2023;30(04):6–10.
30. Huang LQ, Ni N, Zhang L, et al. A preliminary study on the mode of conducting death education in medical schools. *Nursing Research*. 2017;31(10):1256–1259.
31. Han H, Ye Y, Xie Y, et al. The impact of death attitudes on death education needs among medical and nursing students. *Nurse Educ Today*. 2023;122:105738. doi:10.1016/j.nedt.2023.105738
32. Asadpour M, Sabzevari L, Ekramifar A, et al. The Attitude of Medical Students Toward Death: a Cross-Sectional Study in Rafsanjan. *Indian J Palliat Care*. 2016;22(3):354–361. doi:10.4103/0973-1075.185084
33. Zhang L, Huang LQ. Theoretical research and practical application of film and television media in death education in higher education. *Nursing Research*. 2017;31(16):1996–1998.
34. Kirkpatrick AJ, Cantrell MA, Smeltzer SC. Relationships among nursing student palliative care knowledge, experience, self-awareness, and performance: an end-of-life simulation study. *Nurse Educ Today*. 2019;73:23–30. doi:10.1016/j.nedt.2018.11.003
35. Mingdan M, Shanshan C, Xiao L. Study on the effect of death education on death attitude and death anxiety of nurses in emergency department. *Chinese Nursing Education*. 2020;17(1):76–79.
36. Huang LQ, Ni N, Zhang L, et al. Research on the effectiveness of the ‘four-step’ death education model on medical students’ attitudes toward death. *New West*. 2018;2018(02):132–133.
37. Sun JZ, Cai BX, Shen YQ, et al. Effectiveness of student-centred death education in improving nursing students’ attitudes towards death. *Contemporary Nurse*. 2023;30(04):43–45.
38. Wang W, Wu C, Bai D, et al. A meta-analysis of nursing students’ knowledge and attitudes about end-of-life care. *Nurse Educ Today*. 2022;119:105570. doi:10.1016/j.nedt.2022.105570

Journal of Multidisciplinary Healthcare

Publish your work in this journal

The Journal of Multidisciplinary Healthcare is an international, peer-reviewed open-access journal that aims to represent and publish research in healthcare areas delivered by practitioners of different disciplines. This includes studies and reviews conducted by multidisciplinary teams as well as research which evaluates the results or conduct of such teams or healthcare processes in general. The journal covers a very wide range of areas and welcomes submissions from practitioners at all levels, from all over the world. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/journal-of-multidisciplinary-healthcare-journal>

Dovepress
Taylor & Francis Group