



Original Article

Effectiveness of palliative care simulation in newly hired oncology nurses' training

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ABSTRACT

Objective: The aim of the study was to evaluate the effectiveness of palliative care simulations with standardized patients in improving the knowledge, skill performance, and critical thinking of newly hired oncology nurses.**Methods:** By convenience sampling, 59 newly hired oncology nurses in 2019 were enrolled as control group and 50 in 2020 as simulation group at a grade-A tertiary cancer hospital. Simulation group accepted theory (3 sessions) and simulation teaching includes three representative scenarios (6 sessions) in palliative care: pain management, special scenario communication, and turn over. Control group accepted traditional theory and skill teaching (9 sessions). Then both groups underwent four weeks clinical practice. The knowledge score was assessed by knowledge questionnaires, skill performance by standardized clinical evaluations, and critical thinking by the California Critical Thinking Disposition Inventory in both groups before and after intervention. The satisfaction of two groups was assessed by the learning satisfaction scale. Analysis of variance was conducted among the two groups by SPSS20.0. A difference was considered significant when $P < 0.05$.**Results:** After intervention, the simulation group was significantly greater in knowledge of pain management ($t = -7.560, P < 0.001$), and knowledge of special scenario communication ($Z = 5.031, P < 0.001$), as well as the skill score of turnover ($Z = 2.808, P = 0.005$) than the control group. The critical-thinking score was also significantly greater in the simulation group ($Z = 6.229, P < 0.001$). The simulation group had higher satisfaction ($Z = 5.144, P < 0.001$).**Conclusions:** Palliative care simulation with standardized patients can improve newly hired oncology nurses' knowledge, skill performance, and critical thinking and satisfaction of teaching. It would be an effective strategy to train newly hired oncology nurses.

Introduction

Palliative care

Palliative care, as an approach to patient/family/caregiver-centered health care, focuses on optimal management of distressing symptoms, while combining with psychosocial and spiritual care according to patient/family/caregiver needs, beliefs, values, and cultures.¹ Palliative care is a relatively young medical specialty, officially recognized as a specialty in the UK in 1987, and by the American Board of Medical Specialties in 2006.² However, palliative care was not highlighted as an

essential part of medical specialties in China by 2017.³ Due to its late start, palliative care in China is still in the exploratory stage with uneven quality. More attention and more high-quality research and practice are needed to promote the development of the specialty.

Palliative care simulation in cancer

Cancer has become one of the leading causes of death worldwide. Oncology nurse play an important role in palliative care of cancer patients. NCCN clinical practice guideline requires the training of the medical staff who implements palliative care.⁴ However, Palliative care

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of cancer patients is complex and requires flexible and prudent management.⁵ Oncology nurses need to learn special professional knowledge and ability, such as comfort care, symptom control, spiritual care, death education, family grief counseling, etc. In this condition, the traditional teaching mode of combining theory and skill training can not meet the needs of nurse training. Scenario simulation has been first applied to undergraduate nursing courses of palliative care in 2009 in USA.⁶ Recently, studies have confirmed that the palliative care simulation has a good teaching effect in developed regions.⁷ Gellis et al. research showed that palliative care scenario simulation can not only improve students' communication self-efficacy, but also promote team cooperation and students' satisfaction with teaching.⁸ Kirkpatrick et al. found that after scenario simulation, students' self-awareness, knowledge, and skills of palliative care were significantly improved. A randomized controlled trial showed palliative care simulation can also improve nursing students' self-confidence in caring for end-of-life patients.⁵ However, we found there is no such study in China.

Palliative care simulation in Chinese culture

Because of the late start of palliative care and special cultural background, there is still a lack of palliative care training and researches in China. As of 2010, only 12 medical schools have included palliative care content into the curriculum, but there is no separate and systematic curriculum for palliative care or end-of-life care, which is only described as a chapter of the basic medical course for nursing students in some colleges.¹⁰ Until 2015, the Cancer Professional Committee of Chinese Nursing Association organized and translated ELNEC (end-of-life nursing education consortium, ELNEC), and held the first training course of palliative care of cancer patients.¹¹

In the context of Chinese culture, death is a taboo subject, and people try to avoid related topics and practices as much as possible. It also hinders the development of palliative care education and practice. Nursing students have fewer opportunities to learn and experience palliative care in China. So, it is difficult for newly hired oncology nurse to practice it empirically. Due to the particularity of palliative care in Chinese culture and the lack of teaching resources, when nurses enter cancer hospitals after graduation from colleges, the relevant knowledge and skills are almost blank. There is a big gap urgent to deal with. So, the newly hired oncology nurse need an efficient and effective training in China. Refer to previous studies in developed countries, palliative care simulation may be a good choice.

The International Nursing Association For Clinical Simulation And Learning (INACSL) is an international organization dedicated to optimizing medical simulation teaching and improving patient safety services, and has formulated a series of teaching standards for continuous improvement of simulation teaching quality.¹² At present, many academic institutions at home and abroad have adopted its standard to carry out the foundation of simulation education mode. Through simulation teaching, students' learning ability and clinical ability were improved, students' understanding of patients' safety needs and self-confidence in work were increased, and good teaching effect was achieved.^{13–16} However, there is lack of research report on its application in the training of palliative care in cancer patients. The aim of this study was therefore to based on the teaching standard of INACSL, combined with the goal of palliative care in cancer training, design a series curricula and perform a quasi-experiment to evaluate the effectiveness of an palliative care simulation with SPs in improving knowledge, skill performance, and critical thinking of newly hired oncology nurses in China.

Methods

Study design

A quasi-experiment was designed to evaluated the efficacy of an palliative care simulation program for newly hired oncology nurse. By

convenience sampling, the nurses were naturally divided into two groups according to the year of employment. Fifty-nine of 63 newly hired oncology nurses in 2019 were assigned to the control group and 50 of 55 in 2020 were assigned to the simulation group. The control group followed the usual nursing curriculum (nine sessions on palliative care theories and skill training, and four-week clinical practice). The simulation group completed three sessions on palliative care theories, three representative scenarios in palliative care: pain management, special scenario communication and comfort care (six sessions), and four-week clinical practice. The usual nursing curriculum (nine sessions on palliative care theories and skill training, and four-week clinical practice) were provided for nurses who declined participation in this study.

Participants and setting

Participants were recruited from a grade-A tertiary cancer hospital. As one of the top five cancer hospitals in China, the newly hired oncology nurses came from about ten provinces and graduated from about 12 nursing schools with college degree or above. Eligible nurses were newly hired oncology nurse in 2019 and 2020 who: (1) had graduated from nursing school and newly hired, (2) agreed to participate in the study, and (3) signed a consent form after receiving detailed information of the study. 118 nurses were enrolled in the study. After the allocation, nine nurses were declined (four from the control group and five from the simulation group) because they could not participate in the baseline measurements on the day. Finally, there were 59 subjects enrolled in control group and 50 in simulation group (Figure 1).

Hypothesis

The hypothesis generated for this study was that the newly hired oncology nurses who participated in the palliative care simulation would have increased knowledge, skill performance, critical thinking related to palliative care, and a higher satisfaction than the control group.

Interventions

Based on the teaching standard of INACSL, combined with the goal of palliative care in cancer training, we developed an palliative care simulation program for this study.

Firstly, five excellent teachers were selected to be responsible for curriculum design and implementation who were (1) titled as clinical nurse educator or head nurse, (2) college degree or above, (3) more than 10 years of clinical teaching experience, and (4) more than five years of palliative care experience. To ensure the specialization and uniformity of participating teachers, we invited a expert who has received the systematic training of scenario simulation teaching of NLN (National League for Nursing) and obtained the qualification of Chinese Nursing Simulation Teaching Tutor to train the teachers and conduct comprehensive and systematic training in case selection, goal setting, teaching plan design and compilation, standardized patient play, process guidance, briefing, student evaluation, etc.

We designed three representative scenarios in palliative care, including pain management as a part of symptoms management, special scenario communication and turnover as a part of comfort care (6 sessions). To enhance the reality of the simulation, we used SPs who were given details of the scenario approximately one month before the simulation and well-trained in two sessions at least three-times practice. In the first session, the researchers explained the history and condition of the patient in the simulation in detail. In the second session, the SPs clarified how to act and ask relevant questions. The SPs training rehearsed in front of three researchers, who confirmed that the performance was effective. The validity of the palliative care simulation scenarios were verified by a certified cancer nursing specialist and a certified Chinese Nursing Simulation Teaching Tutor. The contents of the program (three scenarios) are shown in Table 1. The goals of the program were that the newly hired

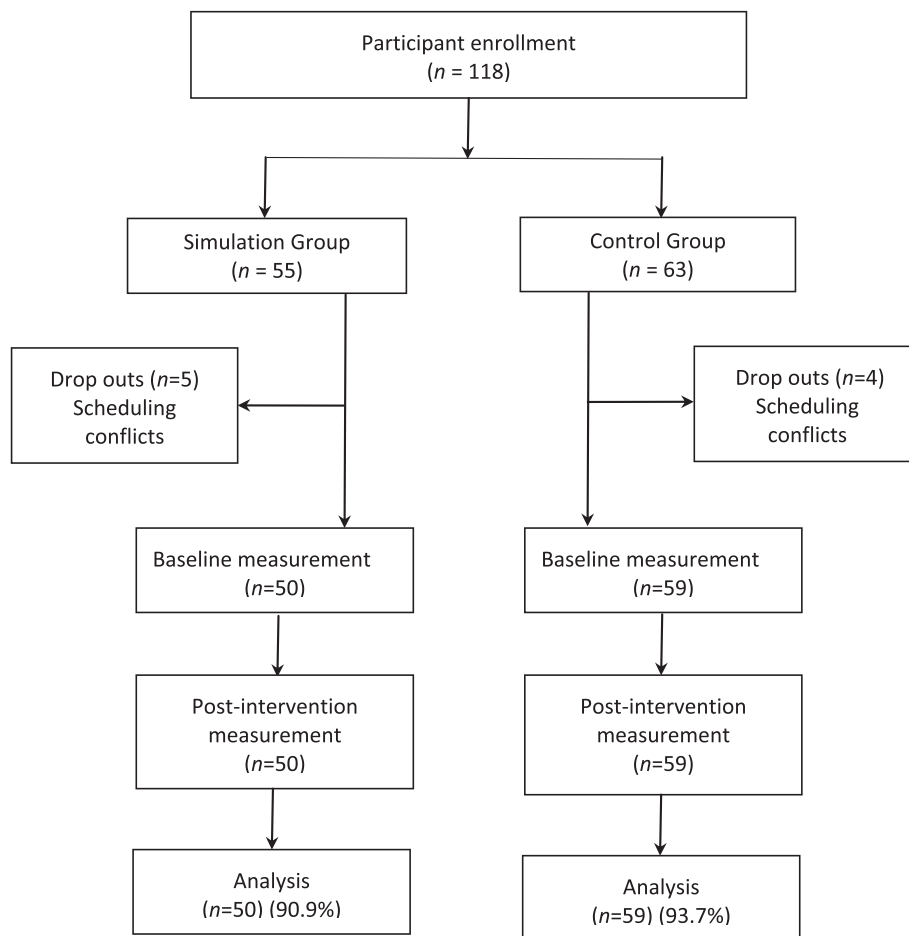


Figure 1. Flow diagram of the participants of this study.

nurses should be able to: 1) assess and manage physical and psychological pain in cancer patients; and 2) use communication skills effectively, particularly the empathy of cancer patients; and 3) provide comfort care such as turnover that would make cancer patients comfortable. These goals are in accord with palliative care practice guideline published by the National Health Commission of the People's Republic of China.³

Each simulation group consisted of ten nurses and every nurses needed to finish three scenarios simulations. The simulation cases were given to nurses 2 weeks before the simulation. Through this, they would realize the learning goals and case characteristics in advance, and be familiar with relevant skills. After completing three sessions of relevant theoretical study, 6 sessions of scenario simulation would be carried out. Each scenario started with a briefing of approximately 10 min. Pre-simulation the teacher created a safe atmosphere and reach a virtual agreement with nurses, then concisely introduced the case, teaching goals, simulation process, role assignment and the environment and equipment. After the briefing, two students started the 20-min initial simulation session as charge nurses and others as observers. After the simulation, a 40-min debriefing session was conducted by two teachers, both of whom received a systematic training of scenario simulation. In the debriefing session, students who participated in simulation commented on what they had done, and observers commented on what they had seen, and teachers added comments to supplement or strengthen their knowledge. Each simulation lasted about 70 min. Due to the long time of simulation and the large number of students, the simulations of five groups were completed in groups in four weeks.

Outcome measures

The effects of the palliative care simulation were evaluated by assessing the newly hired oncology nurses' knowledge, skill performance, and critical thinking on palliative care in both groups. All outcome measures were identical in two groups between 2019 and 2020, and not modified.

The primary outcome was a change in the knowledge score. Two knowledge questionnaires (about pain management and special scenario communication) were prepared and verified by a certified cancer nursing specialist. The pain management questionnaire consisted of eight fill-in-the-blanks questions, five single-choice questions, two multiple-choice questions, five judgment questions, and two short answer questions with a score range of 0–100 points. The special scenario communication questionnaire included five fill-in-the-blanks questions, two short answer questions, and two practical questions with a score range of 0–100 points.

To evaluate skill performance, both groups completed a standardized clinical evaluation of turn over. A detailed and operable evaluation standard has been formulated by teachers and verified by the simulation teaching tutor. Scores ranged from 0 to 100. The students were given 2 min to prepare and a further 15 min to complete the turnover. The two teachers separately scored the students' performance and then took the average score. To avoid bias, the teachers were not involved in scoring of the same persons they instructed.

Critical thinking related to palliative care was assessed using CTDI-CV (the California Critical thinking disposition inventory Chinese version,

Table 1
Contents of the palliative care simulation program.

session	Global themes	Learning objectives	Basic details of case scenario
1	Pain management	<ol style="list-style-type: none"> 1. Teach patients NRS to assess pain 2. Correctly assess break-out pain (degree, location, nature) 3. Correctly evaluate the pain level and adverse reactions of patients after using analgesics 	Liu is a 65 years old male with advanced lung cancer, bone metastasis and current palliative care. Before his retirement, he was a professor in a university. He was conscious, had normal hearing, but had poor memory. On admission, he had traction pain in his right chest and now he had a break-out pain.
2	Special scenario communication	<ol style="list-style-type: none"> 1. Observe and find patients' depression 2. Use listening skills to receive the patient's language and non-verbal information 3. Use open questions to find out the patients' problems 4. Empathy is used to make patients feel understanding and acceptance 5. Reconstruct the negative words of patients positively, help them find the value of living. 	Zhang, a 65 years old woman with advanced gastric cancer, is currently receiving palliative care. She knows about her illness. Her husband died early and her daughter accompanied her. She helped her only daughter take care of her children in Beijing for three years. A year ago, he was diagnosed with gastric cancer. In recent one month, she had reduced defecation and exhaust, abdominal distension and pain, and the outpatient showed incomplete intestinal obstruction. When she received the treatment, the patient complained of physical fatigue, saying: "my body is getting weaker and weaker, so it's boring to live every day. Let me just to die."
3	Turnover	<ol style="list-style-type: none"> 1. Evaluate pipeline, skin, mind and etc. before turning over 2. Turnover patient according to the correct steps based on the principle of safety and force saving 3. Evaluation points after turning over (no compression of any body parts, no joint suspension, etc 	Li, a 80 years old man with advanced lung cancer with bone metastasis. He was admitted in wheelchair and moved with difficulty to prevent pressure injury, nurses need turn over every 2 h.

CTDI-CV), a self-reported questionnaire with responses on a six-point Likert-type scale. The Chinese version was adapted from the California Critical Thinking Disposition Inventory.¹⁷ CTDI-CV consisted of seven subscales: truth seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and cognitive maturity. This inventory has a total of 70 items with 10 items in each subscale, rated on a six-point Likert scale from "1" (completely agree) to "6" (completely disagree). The score of the questionnaire ranged from 70 to 420. A higher score means a better level of critical thinking disposition. A score of 40 or above of one subscale shows a positive disposition in this subscale. A total score of 280 or above indicates positive general critical thinking disposition. The overall content validity index (CVI) of CTDI-CV was 0.89 and the overall Cronbach's alpha of CTDI-CV was 0.90.¹⁸

Learning satisfaction was assessed by the learning satisfaction scale developed by Wang in 2003.¹⁹ The scale has a total of 34 items with four dimensions, namely, teacher teaching, learning curriculum, learning environment and learning achievement. The scale was rated on a five-point Likert scale from "1" (completely disagree) to "5" (completely agree). A higher score means a better learning satisfaction. Because the research object of this program is newly hired oncology nurse, different from adult education, we used a modified scale including 32 items adapted by Hou Qingzhi.²⁰ The overall Cronbach's alpha of the scale was 0.91 used in undergraduate nursing students.²⁰

Demographic characteristics were collected from all participants at baseline, including age, sex, educational background, average score in school, internship time in cancer hospital, prior exposure to simulation, and prior exposure to palliative care.

Data collection

All participants were asked to complete baseline questionnaires including demographic information, two knowledge questionnaires, CTDI-CV, and the learning satisfaction scale. Every student was also scheduled to undertake the standardized clinical evaluation to measure their baseline skill performance. All participants in both groups finished the post-tests after four weeks clinical practice. The questionnaires and standardized clinical evaluation for post-test were similar to the pre-tests.

Data analysis

Statistical analyses used SPSS20.0. Pre-test baseline characteristics for the simulation and control groups were examined using t-tests and Chi square tests. The t-test was used to compare the mean differences in knowledge, skill performance and critical thinking in two groups at baseline. According to whether the set of data is normally distributed, the t-test or nonparametric test was used to compare the post-test scores of knowledge, skill performance, critical thinking, and learning satisfaction in two groups. A difference was considered significant when the *P*-value was less than 0.05.

Ethical considerations

Approval for this study was given by the hospital's ethics committee (Approval No. 2019KT71). The participants were given a detailed explanation of the study. All participants in the control group received information about the simulation program and consented to the study protocol. The group allocations were not revealed to the participants to prevent bias. Nurses allocated to the control group who wanted to experience the palliative care simulation were offered the same program after the study had been completed. Written informed consent was obtained from all participants.

Results

Samples and characteristics of participants

A total of 109 newly hired oncology nurses participated: 59 in control group and 50 in the simulation group. They are mostly female, 21–22 years old, with Bachelor degree, averaged score at 81–90 in school and have no experience of palliative care. There were no significant differences between the two groups in assessed characteristics, prior exposure to simulation either palliative care (Table 2).

Knowledge of palliative care

There was no significant difference in mean score at baseline of knowledge related to palliative care (knowledge of pain management and knowledge of special scenario communication) between the two groups (Table 3). In the post-test, both knowledge of pain management

Table 2
Demographic characteristics in two groups.

	Simulation group n = 50	Control group n = 59	t/χ^2	P
Age, Mean (SD), years	22.18 (1.12)	21.85 (1.24)	-1.456	0.148 ^a
Gender			0.153	0.480 ^b
Male	4 (8%)	6 (10%)		
Female	46 (92%)	53 (90%)		
Educational background			0.049	0.976 ^b
College degree	22 (44%)	25 (42%)		
Bachelor degree	27 (54%)	33 (56%)		
Master degree	1 (2%)	1 (2%)		
Average score in school			3.276	0.351 ^b
≤ 70	0 (0%)	2 (3%)		
71–80	18 (36%)	15 (25%)		
81–90	24 (48%)	34 (58%)		
91–100	8 (16%)	8 (14%)		
Internship months in cancer hospital, Mean (SD)	7.40 (3.40)	8.08 (3.05)	0.172	0.270 ^a
Prior exposure to simulation			0.175	0.696 ^b
Yes	11 (22%)	15 (25%)		
No	39 (78%)	44 (75%)		
Prior exposure to palliative care			0.034	0.854 ^b
Yes	7 (14%)	9 (15%)		
No	43 (86%)	50 (85%)		

^a t-test of independence.

^b Chi-square test.

(50.84 ± 13.45 vs. 32.15 ± 12.34, $t = -7.560$, $P < 0.001$) and knowledge of special scenario communication (61.08 ± 18.63 versus 39.66 ± 19.65, $Z = 5.031$, $P < 0.001$) had a significant difference between the simulation group and the control group (Table 4).

Skill performance of palliative care

At baseline, there was no significant difference in mean score of skill performance between the simulation group and the control group (Table 3). At the post-test, the mean score of skill performance significantly greater in the simulation group than control group (98.98 ± 1.35 vs. 94.03 ± 9.57, $Z = 2.808$, $P = 0.005$) (Table 4).

Critical thinking in palliative care

There was no statistically significant difference in baseline scores for critical thinking between the simulation and control group. The mean critical-thinking score in the post-test significantly greater in the simulation group than control group (243.92 ± 24.54 vs. 213.88 ± 17.45, $Z = 6.229$, $P < 0.001$). At the post-test, the scores in the dimensions of truth thinking, open-mindedness, analyticity, inquisitiveness, and cognitive maturity significantly greater in the simulation group than control group ($P < 0.05$). But, there was no significant difference in the dimensions of systematicity and critical thinking self-confidence.

Table 3
Baseline scores of knowledge, skill performance in the simulation group and the control group.

Measure	Simulation group n = 50	Control group n = 59	t	P
	Mean (SD)	Mean (SD)		
Knowledge of pain management (range 0–100)	31.50 (12.65)	34.15 (11.19)	1.162	0.248
Knowledge of special scenario communication (range 0–100)	21.14 (8.38)	18.54 (6.66)	-1.352	0.179
Skill performance (range 0–100)	37.38 (14.26)	38.44 (13.92)	1.378	0.724

Table 4
Post-test scores of knowledge, skill performance, critical thinking, and learning satisfaction in the simulation group and the control group.

Measure	Simulation group n = 50	Control group n = 59	t/Z	P
	Mean (SD)	Mean (SD)		
Knowledge of pain management (range 0–100)	50.84 (13.45)	32.15 (12.34)	-7.560 (t)	< 0.001
Knowledge of special scenario communication (range 0–100)	61.08 (18.63)	39.66 (19.65)	5.031 (Z)	< 0.001
Skill performance (range 0–100)	98.98 (1.35)	94.03 (9.57)	2.808 (Z)	0.005
Total score of critical thinking (range 70–420)	243.92 (24.54)	213.88 (17.45)	6.229 (Z)	< 0.001
Truth seeking (range 10–60)	30.86 (5.70)	28.15 (6.08)	-2.380 (t)	0.019
Open-mindedness (range 10–60)	31.76 (4.94)	28.81 (6.15)	2.927 (Z)	0.003
Analyticity (range 10–60)	37.96 (3.87)	32.47 (6.87)	5.016 (Z)	< 0.001
Systematicity (range 10–60)	35.58 (5.21)	34.41 (6.91)	1.435 (Z)	0.154
Critical thinking self-confidence (range 10–60)	41.5 (6.29)	39.80 (6.10)	1.326 (Z)	0.188
Inquisitiveness (range 10–60)	38.14 (5.00)	34.37 (7.58)	2.489 (Z)	0.014
Cognitive maturity (range 10–60)	27.72 (5.71)	24.80 (7.72)	-2.210 (t)	0.029
Total score of learning satisfaction (range 32–160)	153.44 (11.85)	142.90 (14.22)	5.144 (Z)	< 0.001
Teacher teaching (range 13–65)	62.48 (4.86)	58.73 (5.83)	4.479 (Z)	< 0.001
Learning curriculum (range 7–35)	33.48 (2.70)	30.76 (3.42)	4.698 (Z)	< 0.001
Learning environment (range 5–25)	23.90 (1.95)	21.98 (3.25)	3.524 (Z)	< 0.001
Learning achievement (range 7–35)	33.58 (2.63)	31.42 (3.24)	4.128 (Z)	< 0.001

Learning satisfaction

At the end of curriculum, the learning satisfaction of the simulation group was significantly higher than that of the control group ($Z = 5.144$, $P < 0.001$) in all four dimensions.

Discussion

Palliative care simulation can increase newly hired nurses' knowledge and skill performance

Our results suggest that the palliative care simulation was effective in increasing newly hired nurses' knowledge and skill performance. That is possible because nursing students' few opportunities to learn and experience palliative care in China. And it is difficult for newly hired oncology nurse to practice it empirically. So, palliative simulations may provide an alternative way to acquire competency in palliative care as part of newly hired nurses' training.

Newly hired oncology nurses in the simulation group showed significantly higher knowledge scores (knowledge of pain management and knowledge of special scenario communication) than those in the control group after the palliative care simulation, which was consistent

with previous study.^{5,9} For the newly hired nurses, the knowledge of palliative care is complex and abstract. Palliative care Scenario simulation training can make abstract knowledge concrete, visualized, and easy to understand. It is maybe an effective tool for knowledge acquisition in the tough, emotional setting of palliative care.

It is delightful in our study, unlike previous studies, we provide a potential use of simulation of symptom management. Palliative care aims to provide comprehensive care, including physical, psychological, spiritual, and social support. However, in the current palliative care simulations, physiological aspects (symptom management) are still lack of attention. Kozhevnikov et al. found that in the retrieval of palliative care simulation studies, most of them were about special scenario communication, and only 13% of them focused on end-of-life symptom management.² Although palliative care emphasizes the importance of communication, symptom management will directly affect the quality of life of patients, which is also worthy of attention. So in this study, we not only set up the simulation of special scenario communication, but also tried to set up the simulation of pain management, which is one of the most common symptoms of cancer patients. After simulation, both the knowledge of pain management and knowledge of special scenario communication were improved. It is suggested that the simulation of symptom management in newly hired nurses' training may be useful. We look forward to more simulations in the future to focus on symptom management to support our findings.

The skill performance (turnover) scores in the simulation group also significantly greater than the control group after the palliative care simulation, which was similar to previous studies.^{5,9} The result shows that the palliative care simulation enabled newly hired oncology nurse to acquire skills by being in realistic situations and interacting with SPs. In a previous study, students who learned with SPs had significantly higher scores in clinical judgment, clinical skill performance, and communication skills.²¹ In this study, the newly hired nurses were able to experience comfort care that was very realistic through interactions with SPs, who convincingly acted out a elderly cancer patients who was confined to bed and need turnover. This enabled the nurse to acquire good physical assessment and comfort care skills.

Palliative care simulation can improve newly hired nurses critical-thinking ability

Critical-thinking scores in the simulation group were significantly higher than the control group after participating in the palliative care simulation, especially in the dimensions of truth thinking, open-mindedness, analyticity, inquisitiveness, and cognitive maturity. However, there were no difference in the dimensions of systematicity and critical thinking self-confidence between two groups. The results is consistent with the results of previous studies.^{20,22,23} Critical thinking is the ability to apply high-order cognitive skills (such as conceptualization, analysis, and evaluation) and the disposition to be deliberate about thinking with open mind or intellectual honesty that lead to action, which is logical and appropriate.²⁴

At present, critical thinking ability is not only an important index of teaching evaluation, but also one of the essential basic qualities of nursing practice skills.²⁵ Critical thinking ability is very important for clinical nurses to make reasonable and effective decisions. It enables nurses to consider carefully and make scientific and reasonable decisions when facing complex problems.²⁶ The results showed that there were no significant differences between the two groups in "systematicity" and "critical thinking self-confidence" ($P > 0.05$). It may be related to the short intervention time and the long-term dependence of nursing students on teachers. Because it takes a long time to cultivate the "systematicity" and "critical thinking self-confidence." A systematic literature review showed previous studies are conflicting about the effect of simulation on nurses and nursing students' critical thinking. More studies with careful designs in the future are still needed to produce more credible evidence on the effectiveness of simulation on critical thinking.²⁷

Palliative care simulation can improve newly hired nurses learning satisfaction

At the end of curriculum, the learning satisfaction of the simulation group was significantly higher than that of the control group in teacher teaching, learning curriculum, learning environment and learning achievement, which was supported by previous studies at home and abroad.^{8,20,28,29} Previous study shows a majority of participants (97.3%) were satisfied with the communication simulation training in geriatric palliative care and reported more positive attitudes toward health care teams.⁸ The study of Hou also indicates students in simulation group had a higher satisfaction in teacher teaching, learning curriculum, learning environment, and learning achievement.²⁰ Simulation is different from traditional teaching. Simulation-based learning can maintain nursing students' learning interests to achieve optimal learning outcomes of the course.³⁰ In the beginning, a realistic clinical experience will attract students' interest. And teachers pay attention to the experience and feelings of nurses, through simulations help nurses effectively learn the knowledge of palliative care to lay the foundation for later clinical practice, and effectively bridge the gap between theory and practice.

The potential impact of coronavirus disease 2019 (COVID-19) in nurses in 2020

In 2020, the COVID-19 pandemic is presenting our healthcare system with its greatest ever challenge. The pandemic reinforce the essential contribution nurses make to the health of society. A latest evidence review indicates key factors to optimizing the impact of nursing and continuing professional development are: self-motivation, relevance to practice, preference for workplace learning, strong enabling leadership, and a positive workplace culture.³¹ The drastic environmental changes (COVID-19 pandemic) may have a positive impact on the motivation to learn in nurses in 2020, possibly leading to better outcomes and satisfaction in the simulation group.

Limitations

There are several limitations in this study. First, the participants were recruited from just one cancer hospital. A multicenter research including more hospitals with different nurse populations would help to generalize the results. Second, due to the limited number of newly hired oncology nurses each year, in order to ensure the quality of teaching in the same period, we carried a quasi experimental study in which nurses divided into two groups according to the year of employment, and did not carry out a randomized controlled study. Finally, this study was limited by time restriction, the improvement was only measured once, and after a four-week follow-up. A short-term re-evaluation may not predict long-term knowledge integration, in the future research a long-term follow-up is needed. Follow-up of multiple time nodes will help us better understand the short-term and long-term effects of scenario simulation.

Conclusions

Palliative care simulation with standardized patients can improve newly hired oncology nurse's knowledge, skill performance, and critical thinking related to palliative care. It would be an effective strategy to train newly hired oncology nurse, who have limited opportunities to experience palliative care in China.

Declaration of competing interest

None declared.

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