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Relationships among nursing student palliative care knowledge, experience, self-awareness, and performance: An end-of-life simulation study

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ABSTRACT

Background: Palliative care education and experience are needed for student competence in delivering high-quality palliative nursing care. Simulation has been linked to acquired clinical competency among pre-licensure students. A known literature gap is measurement of students' performance during end-of-life simulations.

Objectives: The aim of this study was to determine relationships among previous palliative care nursing experience, knowledge, self-awareness, and performance in nursing students during an end-of-life simulation.

Design/Setting/Participants: A quasi-experimental pretest/posttest design was used to assess these variables with a convenience sample of 75 senior nursing students during an end-of-life simulation at a Midwest Jesuit university.

Methods: Self-awareness was measured with the Frommelt Attitudes Toward Care of the Dying, Form B. The Palliative Care Quiz for Nursing measured participants' knowledge. Participants' performance during the simulation was measured using a modified version of the Creighton Competency Evaluation Instrument®. Palliative care nursing self-awareness and knowledge were assessed before and after the simulation. Previous end-of-life care experience was assessed with a single demographic question at pretest only.

Results: The sample was highly experienced in end-of-life care (93.3% reporting experience pre-simulation). Although pretest self-awareness ($M = 124.5$; ± 1.3) and knowledge ($M = 57.1\%$; ± 2.2) were higher in students with two or more types of end-of-life experience ($n = 42$), there were no significant differences ($p > .10$) in these outcomes by groups pre- or post-simulation. Self-awareness ($M = 130.1$; ± 1.2), knowledge ($M = 80.5\%$; ± 2.6), and performance ($M = 94.1\%$; IQR 87.5 to 100) scores were high for student participants ($n = 36$) post-simulation, with moderate correlations found between some scores ($r_{pb} < -0.40$ or 0.40).

Conclusions: Findings support self-awareness and knowledge as antecedents of high quality palliative nursing care. Students demonstrated increased post-simulation knowledge, self-awareness, and quality performance of palliative nursing care regardless of previous end-of-life experience. End-of-life simulation is supported as an education method for increasing palliative care nursing competence and assessing student performance of palliative care nursing interventions.

1. Introduction

Nurses must be prepared to provide high quality palliative care to seriously ill patients (American Association of Colleges of Nursing [AACN], 2016; Institute of Medicine [IOM], 2015). Recent increases in the prevalence of chronic diseases and a growing, aging population have been dramatic. Within 15 years, nearly a quarter of the United States population will be 65 years of age and older, causing a higher demand for end-of-life care (IOM, 2015). Palliative care nursing benefits patients through improved symptom management, increased coping, advocacy in adhering to patient wishes, and improved overall quality of life with reduced hospitalizations and healthcare costs (Guo et al., 2012; Meghani, 2004). Increased competency and quality in the delivery of this specialized nursing care require adequate education and experience at the undergraduate level (AACN, 2016). The AACN has established 17 *Competencies and Recommendations for Educating*

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Undergraduate Nursing Students (*CARES*) for *Preparing Nurses to Care for the Seriously Ill and their Families* that students must achieve by the end of their nursing program (2016).

Clinical experiences in palliative care are difficult to provide due to limited faculty, competition for clinical sites, and discomfort of nurses in sensitive end-of-life (EOL) situations (Eaton et al., 2012; Gillan et al., 2013; Moreland et al., 2012). In the absence of these clinical experiences, students can gain confidence in caring for simulated terminally ill patients through palliative care simulation-based experiences (SBEs) involving EOL issues (Eaton et al., 2012; Moreland et al., 2012; Wyrostok et al., 2014). Despite evidence that SBEs promote student confidence in the provision of EOL care, further research is needed to support SBE as a reliable method for assessing actual clinical competency (Kirkpatrick et al., 2017a). Research is also needed to determine if caring for actual dying patients impacts student competence differently than EOL SBE alone (Kirkpatrick et al., 2017b).

The aim of this study was to determine the relationships among previous palliative care experience, palliative care nursing knowledge, palliative care nurse self-awareness, and performance of palliative care nursing interventions among traditional pre-licensure bachelor's level nursing (BSN) students. Another aim was to determine the effect of an EOL simulation and nursing student role in the simulation, on the development of palliative care nursing knowledge and self-awareness, which has been addressed elsewhere (Kirkpatrick et al., 2018).

2. Background/Literature

In order to meet national and international quality standards of palliative care delivery, nurses must be educated and prepared to implement palliative care principles among seriously ill individuals in actual practice settings (Desbiens et al., 2012; Ferrell et al., 2016; IOM, 2015). Lack of these learning opportunities result in undergraduate nursing students who are not adequately prepared or confident in their ability to deliver palliative care to patients and their families, especially at the end of life (End-of-Life Nursing Education Consortium [ELNEC], 2016). An integrative review of 19 national and international EOL SBE studies revealed that undergraduate nursing students view EOL care as an unpleasant task and source of stress (Gillan et al., 2014; Kirkpatrick et al., 2017b; Zheng et al., 2016). Considering limitations in clinical sites, many nursing programs opt to provide only didactic palliative care content to their undergraduate students (Gillan et al., 2014). Although some students may be able to gain exposure to palliative and EOL care through personal experience or their employment, these experiences vary greatly. There are inconsistent EOL care experiences among undergraduate nursing students, resulting in some students having little or no direct care experience with dying patients upon graduation (Eaton et al., 2012; Gillan et al., 2013; Moreland et al., 2012).

SBE as a viable option when clinical experiences are not available or inequitable across student groups. A randomized, controlled, longitudinal, multi-site study was conducted by the National Council of State Boards of Nursing to evaluate the use of simulation as a substitute for traditional experience in a variety of clinical settings (Hayden et al., 2014). Results showed no significant difference in clinical competency or NCLEX-RN pass rates between three student groups (those with < 10% simulation, those with 25% simulation, and those with 50% simulation) at the time of graduation and up to six months after starting their first RN position. SBE exposes nursing students to clinical situations to meet educational aims in a controlled environment with no risk of harm to actual patients (Gillan et al., 2014). Furthermore, post-simulation debriefing adds depth to the experience by encouraging student self-examination of the emotions, values, and biases revealed by caring for the “dying patient”, promoting further learning and growth (Kirkpatrick et al., 2018; Twigg and Lynn, 2012).

Despite research demonstrating that EOL SBE promotes student confidence and reduces anxiety, objective measurement of student nurses' performance in the delivery of palliative care has not been studied (Kirkpatrick et al., 2017b). Personal factors such as religious influence and experience in caring for dying patients can affect student perceptions and performance in palliative care SBE, and should therefore be assessed as possible covariates (Kunkel et al., 2016). In an integrative review of EOL simulation research by Kirkpatrick et al. (2017b) only two of 19 studies assessed students' previous experience level (Grossman, 2013; Twigg and Lynn, 2012), and only one analyzed this variable as a possible confounding factor on SBE outcomes (Twigg and Lynn, 2012).

Investigations among the relationships of students' previous EOL care experience, palliative care nursing knowledge, self-awareness, and performance are also absent in the published literature. Desbiens et al. (2012) proposed in their Shared Theory in Palliative Care that relationships exist among the theoretical concepts of palliative care competence (experience, knowledge, and self-awareness) and the delivery of palliative care, which are the proposed variables of this study. The theorists attributed poor quality in palliative nursing care to under preparation and incompetence among nurses (2012). A proposition of this middle range theory is that improved nursing competence contributes to high quality palliative nursing care delivery and improvement of patient symptoms and quality of life (Desbiens et al., 2012). A concept analysis of palliative care nursing, conducted by Kirkpatrick et al. (2017a), proposed antecedents (nursing competence), characteristics (compassionate, holistic, attentive, adaptable, realistic/resolute, and moral [CHAARM] nursing care), and outcomes (enhanced quality of life) consistent with proposed Shared Theory. However, study of these relationships is necessary for further theory development.

Using the Shared Theory and CHAARM Concept Model of palliative care nursing as a theoretical framework (Fig. 1), the research questions (RQ) for this study were:

1) Is there a relationship between palliative care nursing knowledge and self-awareness with nursing students' performance of palliative care nursing interventions?
2) Is there a difference in self-awareness and palliative care nursing knowledge between students who have had previous experience in caring for traditional patients at the end of life and those students who have only had experience in end-of-life nursing care using simulated patients?

3. Methods

3.1. Design and Data Collection

A quasi-experimental pretest/posttest design was used. A power analysis determined that with a sample of 78 study participants, when grouped by experience level to address RQ #2 (39 with previous experience; 39 without experience), a large effect size (d = 0.80) could be detected, with an alpha of 0.05, and correlation of 0.50. Meta-analyses of some simulation studies have indicated that researchers of simulation studies can detect large effect sizes (Härkänen et al., 2016; Kim et al., 2016; Lee and Oh, 2015; Shin et al., 2015), and that simulation interventions produce clinically significant educational effects with small sample sizes (Kim et al., 2016). A convenience sample of traditional senior-level nursing students participated in an EOL SBE during their final semester preceptorship practicum course at a Midwest Jesuit BSN program. All 82 students in the course, including two distance students with transmission to their satellite campus, were recruited with no exclusion criteria. Institutional review board approval was obtained. Students provided informed consent via an online survey at the time of their pretest evaluation, two weeks prior to participating in their scheduled SBE. Although the EOL SBE was a required part of the students' senior-level practicum, completion of the online pretest and posttest surveys was not required. Study participants who completed both assessments received a $10 gift card, which served as an incentive

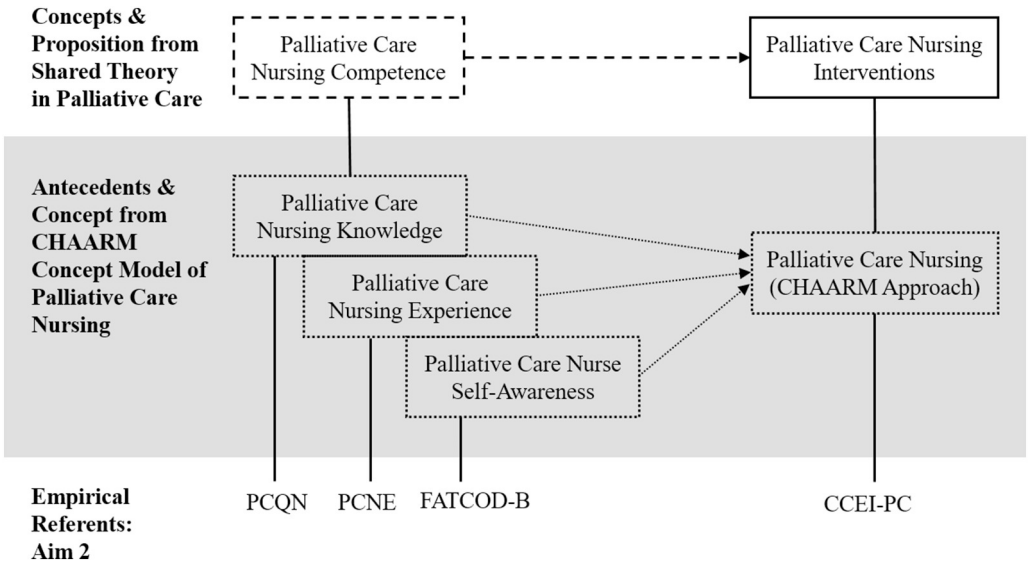

Fig. 1. Alignment of concepts and propositions of Shared Theory in Palliative Care, CHAARM Concept Model of Palliative Care Nursing, and the empirical referents for Aim 2.

for recruitment and retention.

3.2. SBE Procedures

A 45-min prebriefing was first conducted to highlight palliative care principles and prepare students for the fact that the patient in the scenario, a trained standardized patient [SP], would die (Gillan et al., 2014). The SBE scenario was adapted from the Quality and Safety Education for Nurses (QSEN) website with permission (Hunt, 2013). Scenario modifications were made during a pilot study for full implementation of the CHAARM approach (Kirkpatrick et al., 2017a), and compliance with the International Nursing Association for Clinical Simulation and Learning (INACSL) simulation standards (INACSL, 2013).

The scenario included four 20-min phases of illness progression, with two student participants performing in nursing roles each “shift”, then handing off care to the next pair of nursing students. In phase one, students received provider orders to stop parenteral fluid and nutrition infusions for the 34-year-old patient with stage 4 malignant melanoma. Subsequent phases included opportunities for reinforced learning and competence demonstration in palliative care nursing principles, including: symptom management, patient advocacy, therapeutic communication, bereavement support for the patient's mother (also a trained SP), and interprofessional collaboration with a real hospital chaplain and nurse practitioner (enacted by a doctoral nursing student). The standardized patient and mother were provided with detailed instructions and scripting, which ensured intervention fidelity of each simulation.

The principal investigator (PI) served as the simulation interventionist and observed the SBE from the control room of the simulation lab, announcing assessment findings when cued (vital signs, etc.), and making notations for the debriefing session. The Debriefing for Meaningful Learning© (DML) model was used by the trained PI to conclude the SBE session (Dreifuerst, 2015). Chaplains attended the 45-min debriefing session to offer counseling if needed. Immediately following the debriefing, the posttest assessment was completed.

3.3. Instruments

A pilot study of the EOL SBE was conducted to test the feasibility of the study design and to establish the validity and reliability of the study instruments (Kirkpatrick, 2016). Baseline demographic data were collected in this study at the pretest time using the Palliative Care Nursing Experience Questionnaire (PCNE), which was developed by the PI. This questionnaire included an item regarding students' experience for student grouping (RQ #2). Participants were asked to select all responses that applied to their level of previous hands-on experience caring for dying patients. The pretest and posttest surveys also included measurement of participants' palliative care nurse self-awareness and palliative care nursing knowledge. The Frommelt Attitudes Toward Care of the Dying, Form B (FATCOD-B) scale, a validated and reliable 30-item Likert-scale tool that assesses attitudes in college students, was utilized to measure study participants' degree of palliative care nurse self-awareness (Frommelt, 2003). The 30 items include a combination of family- and patient-focused items, with an equal number of positively (1 = strongly disagree to 5 = strongly agree) and negatively worded (reverse scored as 5 = strongly disagree to 1 = strongly agree to) items. Students selected their level of agreement with each item and item scores were tallied for an overall score. With a range of possible scores from 30 to 150, positive attitudes toward caring for dying patients are indicated by higher scores. The FATCOD-B was used in the pilot study (n = 73) with an internal consistency reliability of 0.84 for all 30 items, 0.79 for the patient-focused items, and 0.69 for the family-focused items. The pretest Cronbach's alpha calculated for this study was 0.80 (α = 0.74 patient-focused; α = 0.56 family-focused) and 0.84 at posttest.

The Palliative Care Quiz for Nursing (PCQN), a 20-item test of understanding of palliative care, was used to measure the construct of palliative care nursing knowledge. Students select ‘true’, ‘false’, or ‘don't know’ for each statement related to common misconceptions regarding palliative care (Ross et al., 1996). Total scores are determined by calculating the percent of correct responses (correct = 1; incorrect/“don't know” = 0), with total scores ranging from 0% to 100%. Content experts confirmed validity of the PCQN during its development and significant item-to-total correlation indicated accuracy in reflecting nursing knowledge of palliative care principles (Ross et al., 1996). Internal consistency was calculated for this study at pretest with a KR-20 of 0.54 and 0.48 at posttest for the PCQN, indicating adequacy as a binary true/false instrument in measuring a unified body of content (LoBiondo-Wood and Haber, 2002). Although a KR-20 of 0.54 reflects limited variability among the dispersion of scores on this knowledge exam, this

Table 1
Demographics characteristics.

	All students (n = 75)	Observers (n = 39)	Active participants (n = 36)	p
Religious influence				
Strong influence on attitude	38 (50.7)	18 (46.2)	20 (55.6)	0.491
Minor influence on attitude	22 (29.3)	11 (28.2)	11 (30.6)	1.000
No influence on attitude	4 (5.3)	3 (7.7)	1 (2.8)	0.616
Lack of belief/strong influence	3 (4.0)	2 (5.1)	1 (2.8)	1.000
Lack of belief/minor influence	3 (4.0)	3 (7.7)	0 (0.0)	0.241
Lack of belief/no influence	4 (5.3)	2 (5.1)	2 (5.6)	1.000
Decline to answer	1 (1.3)	0 (0.0)	1 (2.8)	0.480
Experience in end-of-life care				
Personal	42 (56.0)	22 (56.4)	20 (55.6)	1.000
Work	26 (34.7)	11 (28.2)	15 (41.7)	0.237
Clinical	53 (70.7)	31 (79.5)	22 (61.1)	0.127
Other: hospice volunteer	1(1.3)	0 (0.0)	1 (2.8)	0.480
None	5 (6.7)	1 (2.6)	4 (11.1)	0.188
Experience types				
1 Type of end-of-life care experience	28 (37.3)	17 (43.6)	11 (30.6)	0.340
2 Types of end-of-life care experience	32 (42.6)	16 (41.0)	16 (44.4)	0.817
3 Types of end-of-life care experience	10 (13.3)	5 (12.8)	5 (13.9)	1.000

Note. Data presented as frequency count and (percent).

is not uncommon for nursing exams administered toward the end of a nursing program. Billings and Halstead (2009) attribute this to the attrition of students through failure or withdrawal, resulting in a more homogenous sample. Shorter test length can also result in lower KR-20 scores (McDonald, 2007). Positive point-biserials (0.06–0.56) were also obtained for correct responses on all items, indicating good (> 0.3) and very good (> 0.4) discrimination for most items at both pre-test and post-test (Billings and Halstead, 2009).

In order to measure performance of palliative care nursing interventions during the SBE, an instrument with objectivity for comprehensively assessing the specific and unique behaviors of palliative nursing care (CHAARM characteristics) was needed (Kirkpatrick, 2016). A modified palliative care version of the original Creighton Competency Evaluation Instrument (C-CEI®), the CCEI-PC©, was developed and tested, with permission, during the pilot study with a sample of 73 senior level BSN students (Kirkpatrick, 2016). Development of CCEI-PC© included alignment of original instrument items to the CHAARM characteristics of palliative care nursing. Three items measuring specific aspects of palliative care communication (establishing trust, use of appropriate language, and use of resources) were added, resulting in a 25-item instrument (see Appendix 1). Instrument items address four categories of student performance: assessment (three items), communication (five items), clinical judgment (nine items), and patient safety (six items) (Kirkpatrick, 2016). Evaluators rate students, or student groups, based on their demonstration of the competency identified for each item (0 = does not demonstrate competency, 1 = demonstrates competency, NA = not applicable, UA = unable to assess) (Kirkpatrick, 2016; Parsons et al., 2012).

Content validity of this modified instrument was evaluated (content validity index of 1.0) by an expert panel: three doctoral nurses (all qualified ELNEC trainers, one certified in perinatal loss, one nurse ethicist) and one healthcare ethics specialist (coordinates annual interprofessional palliative care training) (Kirkpatrick, 2016). Inter-rater reliability (IRR) was also determined during the pilot by analyzing independent CCEI-PC© evaluations from 11 trained nursing faculty who assessed 12 student performances during an EOL SBE. IRR of all CCEI-PC© items ranged from 0.40 to 0.89.

Two faculty raters were recruited and trained in use of the CCEI-PC© prior to the first EOL SBE. Training included discussion of each phase of the SBE scenario and the specific behaviors necessary for students to demonstrate competency (score of 1) in each CCEI-PC© item. Items that were not applicable for some phases were also determined. During each SBE (four total), the two raters separately viewed live feed of the SBE from remote offices, conducting independent assessments of each student participant (n = 36). Following independent scoring of each student, the raters met and compared their student evaluations, discussing and agreeing upon a single score for each CCEI-PC© item. This approach was taken both to address the variable instrument item interrater reliability (IRR) obtained in the pilot study, as well as to eliminate neutral item scores (0.5), which do not adequately capture competence or incompetence on instrument items.

Percent agreement and IRR for the CCEI-PC© were calculated for the raters' original independent assessments. Percent of agreement between raters for all items was 98.4%, with disagreement only 1.6% of the time. Review of original rater scores revealed that each rater changed an equal number of items to reach consensus (n = 10 items each; 617 total possible items per rater with defaulted items removed), indicating neither rater was more influential or dominant in reaching consensus. IRR for the CCEI-PC© was high; correlation coefficients ranged from 0.65 to 1.0 for individual items, 0.67 to 1.0 for subscales, and overall IRR of 0.60.

4. Data/Results

4.1. Sample

Following data collection, a neutral co-investigator removed all incomplete surveys and re-coded identifiers to ensure participant anonymity prior to the PI's accessing the data. After data cleaning and pairing of data was complete, a confirmed non-random convenience sample (n = 75) of traditional senior-level BSN students was retained for this study (only seven of the 82 students in the course did not complete both surveys). Participants were primarily age 18–22 (90.7%), female (93.3%), and predominantly Catholic (65.3%). No males were in the active participant group, resulting in CCEI-PC© evaluations of only female students. There were no significant differences in religious influence (strong, minor, or no influence) on student attitudes toward caring for dying patients or experience level (1, 2, or 3 types of experiences) in caring for dying patients among student

participants (see Table 1). The sample was also highly experienced (most students had exposure through clinical experiences [70.7%]), with 93.3% of students reporting at least one type of previous experience in EOL care.

4.2. Research Question #1

Two separate point biserial correlations were used to answer RQ #1 and determine if students who scored higher in knowledge or self-awareness were more likely to demonstrate competence on each item of the CCEI-PC©. Statistical assumptions for this test were met. For each outcome, a Bonferroni adjustment was used such that statistical significance would be indicated by $p < .002$ (i.e., 0.05 divided by 22 items). Responses of NA or UA were treated as missing data, making the CCEI-PC© a dichotomous instrument. Based on individual item correlations, statistical significance was not found. This analysis reveals that higher self-awareness (FATCOD-B total scores and sub-scores) and knowledge (PCQN scores) were not significantly correlated with outstanding performance of palliative care interventions (CCEI-PC© item competence ratings). Although moderate correlations ($r_{pb} \leq 0.40$ or 0.40) were found on several individual CCEI-PC© items, the small sample size, homogenous ratings, and lack of significance for those items limit meaningfulness of those results. These results are addressed further in the discussion section.

4.3. Research Question #2

The recruited sample of study participants was more experienced than anticipated (only five students did not report previous EOL care experience). Therefore, the differences found between groups with no experience and those with some experience could not be reliably measured. As an alternative approach to answering RQ #2, students were grouped by the number of types of experience they identified on their baseline assessment (i.e. students with one or less types of experience in caring for dying patients were compared to those with two or more types of experience).

Table 2
Differences in FATCOD-B and PCQN scores between students grouped by number of types of traditional experiences in caring for dying patients.

	≤1 experience (n = 33)	≥2 experiences (n = 42)	Mean difference (95% CI)	p
FATCOD-B				
Patient[a]				
Pre-test	80.1 ± 1.1	82.2 ± 1.0	2.1 (−0.8 to 5.0)	0.147
Post-test	84.7 ± 1.1	86.7 ± 1.0	2.1 (−1.0 to 5.1)	0.181
Family[b]				
Pre-test	41.3 ± 0.5	42.3 ± 0.4	1.0 (−0.4 to 2.3)	0.150
Post-test	43.0 ± 0.7	43.6 ± 0.6	0.6 (−1.1 to 2.3)	0.498
Total[c]				
Pre-test	121.4 ± 1.4	124.5 ± 1.3	3.1 (−0.7 to 6.9)	0.106
Post-test	127.7 ± 1.6	130.3 ± 1.4	2.7 (−1.5 to 6.8)	0.208
PCQN				
Total[d]				
Pre-test	11.3 ± 0.5	11.4 ± 0.4	0.1 (−1.2 to 1.4)	0.850
Post-test	16.1 ± 0.4	15.6 ± 0.3	−0.5 (−1.5 to 0.6)	0.374
Mean[e]				
Pre-test	56.5 ± 2.5	57.1 ± 2.2	0.6 (−6.0 to 7.2)	0.850
Post-test	80.5 ± 2.0	78.1 ± 1.7	−2.4 (−7.6 to 2.9)	0.374

Note. Data presented as mean ± standard error. Mean difference = ≥2 Experiences – ≤1 Experiences in caring for dying patients.
[a] Time*experience interaction: $F(1,73) = 0.00$, $p = .973$.
[b] Time*experience interaction: $F(1,73) = 0.23$, $p = .636$.
[c] Time*experience interaction: $F(1,73) = 0.06$, $p = .809$.
[d] Time*experience interaction: $F(1,73) = 1.07$, $p = .304$.
[e] Time*experience interaction: $F(1,73) = 1.07$, $p = .304$.

Separate mixed between-within ANOVA models were estimated for knowledge and self-awareness to evaluate whether palliative care nursing knowledge (PCQN) and self-awareness (FATCOD-B) scores were higher at pretest in the experienced group (students with two or more types of experience), but not different between groups at posttest (see Table 2). Statistical assumptions for this test were met. Although knowledge and self-awareness scores were higher in the "more experienced" student group at pretest (≥2 Experiences), the differences between groups were not statistically or clinically significant. Based on results of previous studies, clinically significant results would be a mean difference of 5.6 for the FATCOD-B (Carman et al., 2016; Kirkpatrick, 2016) and mean difference of 7% for the PCQN (Knapp et al., 2009; Ross et al., 1996). The mean differences between groups post-simulation were also not statistically significant or clinically meaningful. The largest mean difference seen in Table 2 is 3.1 at pretest for the FATCOD-B and −2.4 at posttest for the PCQN. These results are consistent with Twigg and Lynn's (2012) EOL simulation study in which post-simulation outcomes between students with and without EOL experience were compared. In that study, no significant differences were found in student knowledge or emotional readiness.

5. Discussion

Although non-statistically significant findings were found in the analysis for each research question, careful review of these results warrants further discussion. The CCEI-PC© ratings revealed that the sample of students who participated in the SBE demonstrated high competence on all items except item 15: "Evaluates evidence-based interventions and outcomes". For this item, 16 students (61%) demonstrated competence in establishing realistic goals and open awareness about the patient's health state (10 not competent ratings; 10 ratings of NA). Student competence on this item correlated positively with pretest self-awareness ($r_{pb} = 0.35$ for patient-focused FATCOD-B sub-score; $r_{pb} = 0.27$ for FATCOD-B total score). Although this indicates that students with more positive attitudes toward caring for dying patients performed better in evaluating interventions and outcomes, these findings were not statistically significant at the $p < .002$ level. It is notable that students who performed in the EOL SBE ($n = 36$) had overall high baseline self-awareness ($M = 130.1$; SD = 1.2) and high baseline knowledge scores ($M = 80.5\%$; SD = 2.6). These students were also rated as highly competent in their performance of palliative care nursing per the CCEI-PC© evaluations. These high scores in knowledge (PCQN), self-awareness (FATCOD-B), and performance (CCEI-PC©) support the proposition of the Shared Theory in Palliative Care that knowledge and self-awareness are antecedents of high quality palliative care nursing performance, as depicted in Fig. 1. The proposition regarding the influence of experience on palliative care performance might also be supported given the high experience level in the sample recruited. However, this could not be reliably measured due to limitations with this sample and the demographics instrument used.

Data presented in Table 2 indicated that students with both dichotomous classifications for experience level had increased knowledge and self-awareness scores post-SBE. Those with one or no experience in caring for dying patients ($n = 33$) had increased self-awareness ($M = 6.3$) and knowledge scores ($M = 24\%$) from pretest to posttest. These findings were higher than the mean differences seen in the more experienced group ($n = 42$; $M = 5.8$; $M = 21\%$). Although student differences in FATCOD-B and PCQN scores were not statistically significant between experience groups, students with less experience did have greater increases in palliative care nurse self-awareness and knowledge after the SBE intervention than students with more experience. They also achieved equivalent levels of competence post-SBE (revealed through non-significant differences in knowledge and self-awareness), thus closing the metaphorical "gap" in knowledge and self-

Table 3
Percent competence across CCEI-PC© domains.

	Median (IQR)
Assessment	100 (100 to 100)
Communication	100 (100 to 100)
Clinical judgment	100 (83.3 to 100)
Patient safety	100 (66.7 to 100)
All CCEI-PC items	94.1 (87.5 to 100)

Note. Median presented due to skewed distributions. IQR = inter-quartile range. NA and UA responses were considered missing data.

awareness between the more and less experienced group. This supports the assertion that EOL SBE promotes achievement of desired student outcomes in lieu of actual clinical experience in caring for dying patients (Grossman, 2013; Lippe and Becker, 2015).

5.1. Limitations

In order to compare the effects of experience level on students' post-SBE knowledge and self-awareness outcomes, a new method for defining "more experienced" students (as two or more types of experiences in caring for dying patients) was created. Although the aim was to compare student outcomes between experienced and truly inexperienced students (those with no previous experience) in the area of palliative care, this was not possible because of the small number ($n = 5$) of students with no previous EOL experience and is a limitation. Further research is warranted to more effectively evaluate and control for previous experience in caring for dying patients as a variable that influences student outcomes before and after EOL SBE.

Another limitation in this study was that the sample recruited demonstrated high competence across CCEI-PC© domains (see Table 3). Another study with a sample with a lower level of pretest competence and less experience in the recruited sample would likely produce different outcomes and may be able to detect statistically and clinically significant results. The low variability in experience level and competent performance reported for this sample affects the reliability and generalizability of the results presented. This sample may not be representative of most senior-level BSN students. All students in the recruited sample previously attended a home health observation as part of their junior-level practicum experiences. Some of these were through a home hospice agency. Also, as a Jesuit institution with a predominantly Catholic student base, reflection and spirituality are emphasized and heavily integrated throughout the curriculum. It is possible that this could have contributed to higher levels of baseline nursing student self-awareness when compared to students at other institutions. Use of a control group or a multi-site study for outcome comparisons would be beneficial to address lack of control and the internal validity threats of history, testing, instrumentation, statistical regression, and diffusion of treatment that are potential limitations of the one-group, pretest/posttest design used in this study.

6. Conclusions

This intervention study was conducted to evaluate the effects of an EOL SBE on nursing students' palliative care competence and performance of palliative care nursing interventions. Additional study in this area would promote a more thorough understanding of the relationships between these variables and might demonstrate further support for use of EOL SBE in undergraduate nursing education as a method to provide consistent palliative care experience to all students prior to their graduation. The results of this study indicate that high levels of nursing knowledge and self-awareness influence competent performance of palliative care nursing interventions, thus supporting this proposition within the Shared Theory in Palliative Care and the CHAARM Concept Model of Palliative Care Nursing. Results also demonstrate that EOL SBE is an effective intervention for increasing nursing student competence and high-quality performance of palliative care regardless of previous experience level.

The CCEI-PC© is a highly reliable instrument in assessing competent student nurse performance of palliative care nursing behaviors. This is currently the only instrument available to objectively measure nursing performance of palliative care interventions. Testing of this instrument with a larger and less homogenous sample with more limited competence and previous experience is warranted. The sample recruited for this study did not have the variability in experience level needed to evaluate the effects of that experience on student outcomes. Future SBE studies, which use students' previous experience as a covariate or variable for comparison, would be helpful in better understanding the effects of EOL SBE alone.

The results of this study have implications for structuring future nursing research methods, development of nursing education, and evaluation of nursing practice. The Shared Theory in Palliative Care provides an accurate depiction of how competence in palliative care is achieved, which is meaningful for nurse educators and researchers in structuring teaching and investigative methods. Educators can also confidently implement EOL SBE as a substitute for clinical experience when opportunities to care for terminally ill patients are not available, knowing that outcomes in palliative care knowledge and self-awareness can be achieved. Finally, those seeking to evaluate nursing student performance of palliative care behaviors can do so reliably using the CCEI-PC©.

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Appendix A. Instrument for Evaluation of Palliative Care Nursing Performance

Modified Creighton Competency Evaluation Instrument – Palliative Care Version© (CCEI-PC©)

Student Name:_____ Evaluator Name:

0=Does not demonstrate competency
1=Demonstrates competency
NA=Not applicable

Date: ____/_____/_____ MM / DD / YYYY

ASSESSMENT	1. Obtains Pertinent Data [Holistic approach: includes assessment of patient and family member(s), identifies patient's preferences and/or reviews patient's advance directives, conducts systematic physiologic assessment (includes pain, oral, dyspnea, delirium), & performs cultural/spiritual assessment]	0	1	NA	COMMENTS:
	2. Performs Follow-Up Assessments as Needed	0	1	NA	
	3. Assesses the Environment in an Orderly Manner	0	1	NA	
COMMUNICATION	4. Communicates Effectively with Intra/Interprofessional Team (Team STEPPS, SBAR, Written Read Back Order)	0	1	NA	
	5. Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching) a. Efforts to establish trust (through demonstration of empathy, active listening, and authentic presence)	0	1	NA	
	b. Uses language that is culturally/spiritually sensitive, age-appropriate, and situation-appropriate. (e.g. avoid medical jargon & *" I know how you feel..."*, instead *"This must be really hard for you..."*, use open ended statements/questions)	0	1	NA	
	c. Utilizes resource(s) to improve communication (e.g. education pamphlet, advance directives, coping techniques, etc.)	0	1	NA	
	6. Documents Clearly, Concisely, & Accurately	0	1	NA	
	7. Responds to Abnormal Findings Appropriately (if appropriate, initiates contact with family member(s) and/or interprofessional team related to transition in health states)	0	1	NA	
	8. Promotes Professionalism (respectful, unbiased/nonjudgmental approach; if appropriate, incorporates ethical/legal considerations and resources)	0	1	NA	
CLINICAL JUDGMENT	9. Interprets Vital Signs (T, P, R, BP, Pain) (recognizes S/S of impending death)	0	1	NA	
	10. Interprets Lab Results	0	1	NA	
	11. Interprets Subjective/Objective Data (recognizes relevant from irrelevant data) (e.g. s/s of impending death)	0	1	NA	
	12. Prioritizes Appropriately	0	1	NA	
	13. Performs Evidence-Based Interventions (including complementary & alt. therapies)	0	1	NA	
	14. Provides Evidence-Based Rationale for Interventions (e.g. patient/family preference)	0	1	NA	
	15. Evaluates Evidence-Based Interventions and Outcomes (establishes realistic goals and open awareness about patient's health state)	0	1	NA	
	16. Reflects on Clinical Experience (demonstrates self-awareness)	0	1	NA	
	17. Delegates Appropriately	0	1	NA	
PATIENT SAFETY	18. Uses Patient Identifiers	0	1	NA	
	19. Utilizes Standardized Practices and Precautions Including Hand Washing	0	1	NA	
	20. Administers Medications Safely	0	1	NA	
	21. Manages Technology and Equipment (may include removing/turning off equipment for end of life/bereavement)	0	1	NA	
	22. Performs Procedures Correctly	0	1	NA	
	23. Reflects on Potential Hazards and Errors	0	1	NA	
	TOTAL SCORE: Total / Total Applicable Items (25 possible) = Earned Score				

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