



Standardized Patient Simulation as an Active Learning Strategy in Oncology Symptom Management: A Pilot Study

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Background & Significance

- Nurses in all healthcare settings will provide care for patients surviving cancer and living with the long-term and late-effects of the disease and its treatments (Komprood, 2013).
- Nurses who care for patients living with and surviving cancer require specialized knowledge and skills (Kuhrik et al., 2008).
- The management of symptoms related to cancer and its treatments is a core role of the oncology nurse (Brown, 2015).
- A challenge for nurse educators is to develop active learning strategies that prepare students with the evidence-based knowledge and skills required to provide effective symptom management to oncology patients.
- The use of a simulation-based learning experience, as an active learning strategy, is effective in enhancing the development of registered nurses' knowledge and skills needed to provide evidence-based nursing care to cancer patients and their families in practice (Kuhrik et al., 2008; Simmers, 2014).
- Simulation-based learning experiences with standardized patients (SP simulations) involves the use of trained actors to portray the patient, thus allowing students to practice communication and applying previously learned knowledge and skills in a safe, simulated clinical setting (Becker et al., 2006).
- No researchers to date have examined the effectiveness of SP simulation, as an active learning strategy, in assisting nursing students to apply symptom management principles learned in the classroom to oncology clinical practice.

Purpose

The purpose of this pilot study was to evaluate the effectiveness of SP simulation, as an active learning strategy, in enhancing senior baccalaureate nursing students' ability to connect evidence-based symptom management principles gained in theory learning sessions to simulated oncology clinical practice.

Research Questions

What is the effect of SP simulation, as an active learning strategy, on senior baccalaureate nursing students' knowledge, and self-perceived competence and confidence related to evidence-based, oncology symptom management?

What are senior baccalaureate nursing students' perceptions of, satisfaction with, and self-confidence in SP simulation, as an active learning strategy, to apply evidence-based, oncology symptom management principles?

Design & Setting

A longitudinal, mixed-methods design was used to conduct this pilot study at a Catholic university in the northeastern United States.



Methods

Simulation Development

- The SP simulations were implemented as a formative evaluation tool during week six of a seven-week evidence-based, oncology symptom management seminar.
- The overall goal for development of the SP simulations was for students to apply evidence-based assessment, counseling, and education principles learned in the theory learning sessions in a simulated outpatient oncology setting.
- Two SP simulation scenarios were developed: 1) chemotherapy in colorectal cancer and 2) radiation therapy in breast cancer.
 - Evidence-based oncology resources were used to develop the SP simulation scenarios.
 - Both SP simulation scenarios underwent two person expert review for both oncology content and simulation pedagogy prior to implementation.
 - Each SP simulation scenario included: student preparatory assignment; patient (SBAR) report; actor instructions and script; critical element checklist; patient medical record; healthcare provider orders; symptom assessment checklist; and symptom grading tool.

Simulation Implementation

- SPs for each simulation scenario were provided with a training manual and received two 1-hour training sessions.
- All students participated in both SP simulation scenarios in groups of four to five.
 - Student groups of two to three were assigned to either the role of registered nurse (RN) or observer.
- Students completed six theory-based learning sessions on evidence-based, oncology symptom management and completed a ten question preparatory assignment specific for the scenario in which they simulated the RN role.
- Each SP simulation scenario was designed to run for 20-minutes followed by a 40-minute structured debriefing session using the Debriefing for Meaningful Learning Method (Dreifuerst, 2012).

Simulation Evaluation

- **Pre-Learning Sessions, Pre-SP Simulation, and Post-SP Simulation:** A 24-item researcher-developed instrument was used to measure students' knowledge (8 multiple choice and select all that apply), and self-reported confidence (8 Likert style) and competence (8 Likert style) in oncology symptom management.
- **Post-SP Simulation Only:**
 - National League for Nursing's Student Satisfaction and Self-Confidence in Learning Tool (Jeffries & Rizzolo, 2006) was used to measure student satisfaction with and self-confidence in learning using the SP simulations.
 - Nine researcher-developed questions (4 open-ended and 5 Likert style) were also used to measure student satisfaction with and perceptions of the SP simulations.
- **Data Analysis:**
 - **Quantitative:** Descriptive statistics & Repeated measures - analysis of variance (RM-ANOVA)
 - **Qualitative:** Responses to open-ended items were analyzed for themes using conventional content analysis

Findings

Sample Characteristics

For this pilot study, the sample consisted of one section of senior seminar students (N=9).

- **Age:** 21.0 ± 0
- **Gender:** 100% Female
- **Ethnicity:** 88.9% Non-Hispanic / Non-Latino
- **Race:** 77.8% White

Student Competence, Confidence, and Knowledge

- **Competence:**
 - Pre-Learning Sessions** M= 24.11 ± 6.91 (15-38)
 - Pre-SP Simulation** M= 31.11 ± 4.07 (25-36)
 - Post-SP Simulation** M= 36.89 ± 2.94 (33-40)
 - Change Over Time** F(2,16)= 23.21, **p < 0.001**
- **Confidence:**
 - Pre-Learning Sessions** M= 24.44 ± 5.64 (17-36)
 - Pre-SP Simulation** M= 30.44 ± 4.56 (21-37)
 - Post-SP Simulation** M= 35.78 ± 4.27 (28-40)
 - Change Over Time** F(1,2,9,8)= 18.27, **p = 0.001**
- **Knowledge:**
 - Pre-Learning Sessions** M= 3.33 ± 1.23 (1-5)
 - Pre-SP Simulation** M= 3.56 ± 0.73 (3-5)
 - Post-SP Simulation** M= 4.00 ± 1.00 (3-6)
 - Change Over Time** F(2,16)= 1.14, **p = 0.345**

Table 1: Comparison of Mean Competence Scores Over Time

Comparison of Study Time Points		Mean Difference	Standard Error	Significance (p-values)	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-Learning Sessions	Pre-SP Simulation	-6.667	2.173	0.046	-13.220	-0.113
	Post-SP Simulation	-12.444	2.001	0.001	-18.478	-6.411
Pre-SP Simulation	Pre-Learning Session	6.667	2.173	0.046	0.113	13.220
	Post-SP Simulation	-5.778	1.140	0.003	-9.215	-2.340
Post-SP Simulation	Pre-Learning Session	12.444	2.001	0.001	6.411	18.478
	Post-SP Simulation	5.778	1.140	0.003	2.340	9.215

Adjustments made to significance for multiple comparisons: Bonferroni correction

Table 2: Comparison of Mean Confidence Scores Over Time

Comparison of Study Time Points		Mean Difference	Standard Error	Significance (p-values)	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-Learning Sessions	Pre-SP Simulation	-6.000	2.386	0.108	-13.197	1.197
	Post-SP Simulation	-11.333	1.986	0.001	-17.323	-5.344
Pre-SP Simulation	Pre-Learning Session	6.000	2.386	0.108	-1.197	13.197
	Post-SP Simulation	-5.333	0.957	0.002	-8.221	-2.446
Post-SP Simulation	Pre-Learning Session	11.333	1.986	0.001	5.344	17.323
	Post-SP Simulation	5.333	0.957	0.002	2.446	8.221

Adjustments made to significance for multiple comparisons: Bonferroni correction

Student Perceptions & Learning Satisfaction and Confidence

- **Simulation Perceptions:** M= 23.11 ± 3.44 (15-25)
 - **Theme One: Realistic Application**
"I found it helpful to apply these symptoms on an actual person. It made me think about the actual consequences of the symptoms."
 - **Theme Two: Enjoyable and Helpful**
"This was great! One of the best aspects of the seminar."
 - **Theme Three: Suggestions for Improvement**
"I would say I'd change the debriefing sessions to be a little more concise so there's enough time for both groups to debrief quickly."
- **Learning Satisfaction (N=5):** M= 23.40 ± 2.07 (20-25)
- **Learning Confidence (N=5):** M= 36.20 ± 3.56 (32-40)



Discussion

Limitations

- Limited time to complete the two SP simulations due to students' class schedules.
- Small sample size due to restrictions placed on seminar enrollment.
- No existing tool to measure student knowledge or self-perceived competence and confidence in oncology symptom management.

Implications

- Due to the small and homogeneous sample, the findings from this pilot study must be interpreted with caution.
- Further research is needed to support and improve the generalizability of findings from this pilot study.

Conclusions

- SP simulation holds promise, as an active learning strategy, to enhance undergraduate nursing students' ability to connect evidence-based symptom management principles gained in theory learning sessions to simulated oncology clinical practice.

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