Effectiveness of Simulation-Based Orientation of Baccalaureate Nursing Students Preparing for Their First Clinical Experience

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ABSTRACT

This study evaluated the effectiveness of a 2-day, simulation-based orientation for baccalaureate nursing students preparing to begin their first clinical experience. Students were recruited for participation in the study from a clinical foundation course. Actors (standardized patients) provided students with the chance to engage with simulated real patients in realistic clinical situations prior to entering the clinical setting. Students' perceived stress, knowledge acquisition, anxiety, self-confidence, and satisfaction with the orientation process were assessed. Findings indicated a statistically significant increase in knowledge of and confidence in skills needed when first entering the clinical setting and a decrease in anxiety following the orientation activity. Students had a positive attitude about interaction with real patients, faculty, and other students during the experience. Improved self-confidence and satisfaction were reported as a result of participation in simulation-based orientation.

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The clinical experience is a significant part of nursing education and students' preparation for practice. However, nursing students report lack of self-confidence and increased apprehension about meeting performance expectations as sources of stress (Heslop, McIntyre, & Ives, 2001). High levels of anxiety can adversely affect task performance. Unsuccessful performance, along with negative emotions such as anxiety and decreased self-confidence, can create a feedback mechanism that continues to reinforce anxiety and further decrease self-confidence, causing inability to perform. It is important for nurse educators to use instructional strategies that foster learning, decrease anxiety and stress, and increase self-confidence. Simulation-based learning has been used successfully to prepare novice students for their first clinical experience while decreasing stress and promoting confidence (Bremner, Aduddell, Bennett, & VanGeest, 2006).

BACKGROUND AND SIGNIFICANCE

Typically, baccalaureate nursing (BSN) students enter their first clinical course with limited experience in health care. A simulated learning experience offers them an opportunity to practice skills without the threat of harm to patients (Henneman & Cunningham, 2005). Simulations "mimic the reality of a clinical environment" (Jeffries, 2005, p. 97), providing a safe and controlled environment for experiential learning (Cioffi, 2001). Proficiency in clinical and cognitive skills and effective communication and critical thinking can be developed during simulation (Becker, Rose, Berg, Park, & Shatzer, 2006; Yoo & Yoo, 2003).

Simulation is a nontraditional education strategy that originated in nonmedical industries. Nursing has used simulation for more than 50 years to teach basic skills such as respiratory resuscitation, venipuncture, and urinary catheterization (Cooper & Taqueti, 2004). Although the term *simulation* often refers to the use of high-fidelity manikins (Schiavenato, 2009), various methods of simulation learning exist (Harder, 2010; Henneman & Cunningham, 2005; Seropian, Brown, Gavilanes, & Driggers, 2004). One such method is the use of a standardized patient (SP), who can be an actor emulating a patient with a specific medical history, diagnosis, or clinical presentation. Standard-

ized patients are often used in health care to offer students a human interaction with simulated real patients while practicing care scenarios (Ebbert & Connors, 2004; Hale, Lewis, Eckert, Wilson, & Smith, 2006; Shawler, 2008; Yoo & Yoo, 2003). The use of SPs in a simulation-based learning activity provides similar experiences to all students (Ebbert & Connors, 2004) and a sense of reality that cannot be achieved with a high-fidelity simulator. A realistic simulation experience can be more clinically relevant than real clinical settings when the experience is strategically focused on objectives (Becker et al., 2006). Thus, realism, accompanying the use of SPs in simulation learning, bridges the gap between theory and practice.

CONCEPTUAL FRAMEWORK

Approaching a stranger (patient), asking personal questions, and performing an assessment are foreign activities that frighten beginning nursing students. Using Kolb's (1984) experiential learning theory (ELT), faculty developed a simulation-based clinical orientation designed to provide students with clinical experiences that reflected both concrete and abstract situations commonly encountered during the first days in the clinical setting. Kolb described learning as "the process whereby knowledge is created through the transformation of experience" (p. 38). According to Kolb's ELT, the student learns through experiencing real-life situations, rather than memorizing or mimicking faculty actions. Hence, experience is the focus of ELT. Participating in a simulated orientation guided by a sequential cycle of do, observe, think, and plan (Kolb, 1984), students can experience anticipated events in the upcoming clinical experience. The first stage of the ELT—concrete experience—is simulation of the actual experience. During the second stage—reflective observation—students contemplate what happened and what thought process was used at that time. Abstract conceptualization—the third stage—includes students thinking about or analyzing what occurred, whereas the fourth stage—active experimentation—is when students plan how to apply knowledge obtained from past observations and experiences to a future situation, such as a clinical day.

The do, observe, think, plan model (Kolb, 1984) provides hands-on practice with an actual person, as well as time to observe others' behaviors and interactions. It also offers an opportunity to provide care while thinking about possible alternative actions. Through this model, the participant is given a second chance to successfully attempt a procedure or communication response, which is usually not possible in the clinical setting, and plan how to approach similar situations during actual patient care.

Kolb and Fry (1975) identified four distinct abilities needed for effective learning: concrete experience, reflective observation, abstract conceptualization, and experimentation, as manifested in the stages of the ELT (Kolb, 1984). The simulation experience provides an opportunity to develop all of these abilities while allowing for the use of a wide variety of learning-style preferences. According to Jeffries (2005), outcomes of a well-orchestrated simulation experience are knowledge acquisition, skill performance, self-confidence improvement, and critical-thinking enhancement, combined with student satisfaction.

SIMULATION-BASED ORIENTATION TEACHING INNOVATION

The simulation-based orientation was developed specifically for this study by the College of Nursing faculty using the Simulation in Nursing Education framework (Jeffries, 2005) as a guide. Nursing students entering their first clinical course participated in the orientation over two consecutive 8-hour days. The orientation content was the same as that taught in the traditional lecture format historically used at our university. Students were divided into five groups, consisting of 10 to 12 students each, for the educational experience. Each group was assigned two clinical instructors to facilitate the learning experience and one SP. Prior to the simulation-based experience, a script was written by faculty to prepare SPs for their patient role. The SPs were acquaintances of faculty, not professional actors, who were paid $20 per hour for their participation. Not knowing the SPs enhanced the realism of the experience for students.

On day 1 of the orientation, students were provided with an opportunity to review the medical record of a patient for whom they would be providing care during the faculty-guided, simulation-based experience. Following review of the medical record, each student group, along with its faculty facilitators, moved to a simulation laboratory, where the students interacted with a SP, and completed the initial databases (history and physical) on the assigned patient. Students took turns interviewing and physically assessing their SPs, with faculty calling time outs to take advantage of teachable moments. Day 1 concluded with instructions for completion of the required clinical paperwork and assignments, such as nursing care plans and medication research.

Day 2 began with the students wearing their clinical uniforms, participating in a preconference with their clinical groups, and simulating the experience of beginning each clinical day. Following the preconference, students provided care (e.g., vital signs, hygiene, mobility, bed making, and medication administration) to the same SP to whom they were assigned the preceding day. The second day concluded with a postconference to reinforce important lessons learned.

Throughout the simulation experience, faculty, SPs, and other students assisted participants through difficult interactions. Intermittent sessions of debriefing occurred during the course of the experience to encourage reflection, review positive experiences, and provide opportunities to discuss and practice alternative responses or actions.

METHOD

Design

A mixed-method, quasi-experimental study was conducted to evaluate the effect of a simulation-based orientation for a nursing foundation clinical course on knowledge acquisition, anxiety, self-confidence, and student satisfaction in BSN students preparing to begin their first clinical experience.

On receipt of funding to support the project, university institutional review board approval was obtained. Prior to participation in orientation activities, the study was fully explained to the

nursing students, and written consent was obtained from each participant.

Fifty-seven students participating in the orientation activities were required to complete a preorientation and postorientation knowledge assessment to evaluate fundamental proficiency required for safe practice in the clinical area. Seven students did not consent to participate in the study; therefore, their knowledge assessment data were not included in the analysis and they did not complete anxiety and self-confidence assessments. The 50 students participating in the study also completed instruments measuring anxiety levels and self-confidence in skills specific to the clinical course. After the orientation, 10 study participants voluntarily took part in two focus groups—one group consisting of four students and the other of six.

The study was designed to answer the following research questions for BSN students preparing to begin their first clinical experience:

- Does a simulation-based orientation facilitate knowledge acquisition?
- Does a simulation-based orientation decrease anxiety?
- Does a simulation-based orientation improve self-confidence?
- What is the relationship between self-confidence and anxiety?

Sample

A convenience sample of 50 BSN students was recruited from a foundation clinical course. Students repeating the course were excluded from the study. The cohort received orientation using a simulation-based format, rather than a traditional lecture format, to prepare for the clinical experiences.

Instruments

Prior to orientation, participating students completed a demographic survey and two instruments developed by faculty members familiar with the requirements of the foundation clinical course—the Knowledge Assessment (KA) and the Self-Confidence Assessment (SCA). Two psychosocial instruments used to determine levels of anxiety, the Perceived Stress Scale (PSS) and the State–Trait Anxiety Inventory for Adults (STAI), were administered at the same time. After completion of the simulation-based orientation, students participating in the study repeated the KA, the state portion of the STAI, and the SCA to evaluate changes attributable to the orientation. Student satisfaction was assessed in the focus groups after orientation.

Instrument Descriptions. The KA is a 12-item, faculty-developed assessment used to determine the baseline level and the change in knowledge following the orientation experience in a pretest–posttest format (**Table 1**). Higher scores indicate greater knowledge. No data exist for validity or reliability purposes for this instrument.

The PSS (Cohen, Kamarck, & Mermelstein, 1983) is a 10-item, self-report instrument designed to measure the degree to which situations in an individual's life are appraised as stressful. The questions in the PSS ask about feelings and thoughts during the previous month, and scores can be contrasted against provided norms. Higher scores indicate higher levels of perceived stress.

The STAI (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is an assessment of anxiety widely used to differentiate between the temporary condition of state anxiety, or anxiety attributable to a situation, and the more general and long-standing quality of trait anxiety, or the respondent's typical baseline anxiety level. The STAI has 40 questions, with a range of four possible responses to each. Higher scores indicate higher levels of anxiety. The Cronbach's alpha of the internal consistency in the state portion of the STAI ranges from 0.83 to 0.96 in high school-aged and college-aged students (Mawdsley et al., 2007).

The SCA is an 11-item instrument designed by faculty to measure students' self-confidence in performing nursing-care behaviors taught during the simulation-based orientation learning experience (**Table 2**). Higher scores indicate greater confidence in performing the tasks. Validity and reliability of the SCA have not been established.

Statistical Methods

All scores were summarized using the mean and standard deviation. The relationships between numerical scales were studied using Pearson's correlation coefficient and regression analysis. Pretest and posttest scores were compared using paired *t* tests. All test scores were evaluated and compared by different demographic characteristics (e.g., gender, age group, and work experience in health care) using two-sample *t* tests. Wherever appropriate, nonparametric Wilcoxon tests were used to determine the significance of effects. All statistical analyses were accomplished using the statistical software, JMP®. Results were considered significant at a level of 0.05.

The data obtained from the focus groups were manually transcribed and analyzed. Thematic content analysis was conducted.

RESULTS

Fifty BSN students participated in the study (**Table 3**). Student participants were divided into two age groups: 19 to 28 years and 29 to 55 years. Nine (18%) students were male and 41 (82%) were female. All participating students were enrolled in a foundation clinical course for the first time, and 22 (44%) had some work experience in the health care environment in positions such as patient care assistant, medic–emergency medical responder, phlebotomist, pharmacy technician, or file clerk. One student did not complete the SCA assessment, one student did not answer one question on the SCA assessment, and one student did not complete the STAI posttest state assessment.

Because the SCA was created by faculty at the research university and to provide insight into the association between self-confidence and anxiety, the relationship between the SCA and the PSS was studied using Pearson's correlation (**Table 4**). A significant negative correlation was observed between PSS and the pretest SCA ($r = -0.41$, $p = 0.0034$). However, improvement in SCA was not associated with PSS ($r = 0.10$).

Knowledge Assessment

On average, the KA pretest scores were significantly higher among female students, compared with male students (mean difference = 0.95, $p = 0.0496$). This indicates that women are

TABLE 1

Clinical Orientation Knowledge Assessment

1. After receiving your clinical patient assignment, the initial step is to:
   a. Review the patient's chart.
   b. Record the patient's medication record.
   c. Ask the nurse in charge for a status report.
   d. Ask the patient's permission to care for him or her.
2. To verify the patient's current medication orders, you should review:
   a. The medication section in his or her chart.
   b. The current medication administration record.
   c. The physician's orders.
   d. The medication printout section in the chart.
3. To validate subjective information obtained from your patient, which of the following areas of the chart should contain the information below? Select all that apply.
   a. History and physical
   b. Physician's orders
   c. Progress notes
   d. Admission nursing database
4. In preparing to provide care for your patient, which type of assessment would you perform?
   a. Episodic
   b. Complete
   c. Follow up
   d. Problem centered
5. To evaluate your patient's usual or baseline vital signs, you would:
   a. Ask the patient for the information.
   b. Take the patient's vital signs.
   c. Review the patient's graphic sheet.
   d. Ask the nursing assistant for the patient's vital signs.
6. In preparing paperwork for submission to your instructor, the following information should be included. Select all that apply.
   a. Patient's name and room number
   b. Student name and date
   c. Diagnosis
   d. Subjective data

beginning the experience with a stronger knowledge base than men. No significant differences in the KA pretest total scores by age group or work experience in the health care environment were noted (**Table 5**).

Total scores on the KA posttests were significantly higher on average than the pretest scores ($p = 0.0007$), indicating overall improvement in knowledge. An average increase of 0.64 points was observed. Twenty-seven (54%) of 50 students improved their scores by 1 to 4 points. Twelve students' knowledge level remained the same, and 11 students' knowledge level decreased by 1 or 2 points. Differences in the pretest and posttest scores were not significant by gender, age group, or work experience.

Perceived Stress Scale

The PSS scores were not significantly different by demographic characteristics, indicating a fairly similar sample of participants in terms of perceived stress. However, in all characteristics that were approximately comparable to the norms published for the instrument, significant differences were identified (**Table 6**).

The mean PSS scores for both male (17.78) and female (18.39) student participants were significantly higher than the norms (male, 12.1, and female, 13.7; $p = 0.0054$ and $p < 0.0001$, respectively). The age groups in this study are classified as 19 to 28 years and 29 to 55 years, whereas the age groups for the norms are classified as 18 to 29 years, 30 to 44 years, and 45 to 54 years, which were then combined into two groups: 18 to 29 years and

TABLE 1 (Continued)

Clinical Orientation Knowledge Assessment

7. Your assigned patient is unable to verbally communicate due to a previous stroke. How will you obtain the needed information to complete required paperwork and provide patient care?
   a. Ask the charge nurse and your instructor for help.
   b. Perform a complete physical assessment and review the chart.
   c. Review the chart and ask the patient's nurse for the rest of the information.
   d. Perform a complete physical assessment and hope that a family member is present the next day to provide the remaining information.
8. Your assigned patient is on contact isolation, and staff members are entering the room without donning a gown. What should you do?
   a. Ask if the gown is necessary.
   b. Wear only gloves.
   c. Confront the nurse.
   d. Don the appropriate attire.
9. You have just assessed your patient's vital signs on the first clinical day, and your patient's temperature is 101.6°F. What is your next action?
   a. Record it on the graphic sheet.
   b. Notify the nursing assistant.
   c. Report it to the assigned nurse and instructor.
   d. Check the patient's baseline temperature.
10. You find your newly assigned patient unresponsive and not breathing, what is your initial intervention?
   a. Go to the desk and get help.
   b. Go and find your instructor.
   c. Go and get an ambu bag and initiate CPR.
   d. Call for help and initiate CPR.
11. You are required to perform A.M. care on your assigned patient. Which of the following is the most therapeutic question?
   a. "Are you ready for your bath?"
   b. "Would you rather the nursing assistant give you bath?"
   c. "Would you like for your wife to bathe you this afternoon?"
   d. "Would you like to take your bath before or after breakfast?"
12. After receiving report on your patient from the nurse, your first responsibility is to:
   a. Ensure that your team members know your duties for patient care.
   b. Review the physician's orders and check the medication administration record.
   c. Take vital signs.
   d. Perform your physical assessment and begin A.M. care.

Note. Ambu bag = bag–valve mask; CPR = cardiopulmonary resuscitation.

30 to 54 years. Although not identical, this reclassification made the age groups for the norm approximately similar to the age groups in our study. For both age groups, the mean PSS scores for student participants were significantly higher than those for the norm. On average, the mean PSS score for study participants was higher by 4.48 points for the younger participants and 3.81 points for the older participants, compared with the norm.

State–Trait Anxiety Inventory

Trait. The score for anxiety inherent to trait, or one's baseline that is not affected by a current situation causing anxiety, was significantly lower (difference = 3.55, $p = 0.0905$ [two-sided t test]) for those with work experience in the health care environment ($M = 36.64$) than for those without experience ($M = 40.19$). No significant differences were discovered for the trait anxiety scores by gender or age group (**Table 7**).

State. Comparison of pretest and posttest scores showed that the average anxiety levels (i.e., those exacerbated by a current situation), decreased significantly for all students ($M = –9.53$) (**Table 7**). Except for male participants, all other demographic groups showed a significant decrease in average state anxiety levels. A decrease was seen for female participants ($M =$

TABLE 2

Self-Confidence Assessment

Confidence is a belief in one's own abilities to successfully perform a behavior. For each of the nursing behaviors on this questionnaire, please circle the number that best describes your level of confidence for each clinical behavior listed.

Clinical Behavior	1 = *Completely Lacking in Confidence* (Indicates That You Believe You Cannot Complete the Behavior)	2 = *Partly Lacking in Confidence* (Indicates That You Believe You Might Be Able to Complete the Behavior)	3 = *Confident* (Indicates That You Believe You Are Generally Able to Complete the Behavior)	4 = *Very Confident* (Indicates That You Strongly Believe You Can Complete the Behavior)
1. Find pertinent information in my assigned patient's medical record.	1	2	3	4
2. Talk with my assigned patient.	1	2	3	4
3. Accurately assess my patient's vital signs.	1	2	3	4
4. Perform therapeutic touch with my assigned patient.	1	2	3	4
5. Obtain a health history from my assigned patient.	1	2	3	4
6. Perform a physical assessment on my assigned patient.	1	2	3	4
7. Remain calm if faced with unexpected situations.	1	2	3	4
8. Identify nursing diagnoses for my assigned patient.	1	2	3	4
9. Develop a plan for the safe administration of my assigned patient's medications.	1	2	3	4
10. Administer medications safety.	1	2	3	4
11. Meet the required expectations of my first semester in a clinical experience.	1	2	3	4

TABLE 3

Demographics of Student Participants (*N* = 50)

Category	No.	Percent
Gender		
Male	9	18
Female	41	82
Age (y)		
19 to 28	40	80
29 to 55	10	20
First enrollment in foundation clinical course		
Yes	50	100
No	0	0
Previous experience working in health care		
Yes	22	44
No	28	56

TABLE 4

Correlations Between Study Instruments

Pairs of Scales	Pearson Correlation Coefficient (*r*)
Perceived Stress Scale and pretest Self-Confidence Assessment (*n* = 48)	0.41**
Perceived Stress and Improvement in Self-Confidence (*n* = 50)	0.10
State–Trait Anxiety Inventory:	
Trait and pretest for state (*n* = 49)	0.67***
Trait anxiety and improvement in state anxiety (*n* = 46)	–0.41**

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

–11.28), for both the younger (M = –9.68) and the older age groups (M = –8.89), and for those with work experience in the health care environment (M = –7.20), as well as for those without work experience in health care (M = –11.26).

Female participants showed a significantly higher decrease in the average of state anxiety levels than males (mean difference = –10.28, p = 0.0335; Wilcoxon, p = 0.0160). No significant differences were found among any other demographic characteristics.

TABLE 5

Students' Knowledge Assessment (KA) Before and After Simulation-Based Orientation

	Mean ± Standard Deviation	
	Baseline KA (Pretest)	**Improvement in KA Scores (Posttest)**
All students (*N* = 50)	6.34 ± 1.26	0.64 ± 1.34***
Gender		
Male (*n* = 9)	5.56 ± 1.42	0.56 ± 0.88*
Female (*n* = 41)	6.51 ± 1.16	0.66 ± 1.42**
Age group (y)		
19 to 28 (*n* = 40)	6.47 ± 1.22	0.50 ± 1.28**
29 to 55 (*n* = 10)	5.80 ± 1.32	1.20 ± 1.48*
Experience working in health care		
Yes (*n* = 22)	6.41 ± 1.22	0.45 ± 1.47
No (*n* = 28)	6.29 ± 1.30	0.79 ± 1.23**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

State–Trait Relationship. To determine whether any association exists between the anxiety trait and the pretest anxiety state, correlation analysis was conducted between the trait scores of the STAI and the pretest state scores. This showed a significant positive correlation ($r = 0.67$, $p < 0.0001$), indicating that those with a higher inherent anxiety trait are also likely to have a higher anxiety level, which is aggravated by the thought of participating in an upcoming clinical experience (**Table 2**). On average, a 1-point increase in the trait score corresponded to an approximate 0.97-point increase in the pretest state score.

Improvement in state scores of the STAI showed a significant negative correlation to the trait score of the STAI ($r = -0.41$, $p = 0.0045$), signifying that the orientation simulation decreased the state anxiety by a greater amount in those with lower trait anxiety than in those with higher trait anxiety. For those with a 1-point lower trait anxiety score, the state score is expected to be decreased by approximately 0.67 points.

Self-Confidence Assessment

Self-confidence for the skills taught in the simulation-based orientation improved significantly for all students ($M = 4.55$). Significant improvement was also observed for all demographic groups: male ($M = 5.13$), female ($M = 4.44$), younger age group ($M = 4.92$), older age group ($M = 3.2$), those with work experience in health care ($M = 3.86$), and those without work experience in health care ($M = 5.12$) (**Table 8**). No significant differences were noted between categories of each demographic characteristic.

Differences in responses to each question of the SCA on pretests and posttests were analyzed, and all but one question indicated significant improvement in the skill (**Table 9**). The question related to the ability to find pertinent information in the medical record did not show significant improvement in self-confidence as a result of simulation-based orientation. This finding is attributed to the novelty of a patient-specific medical record for the students.

TABLE 6

Perceived Stress Scale

	Mean ± Standard Deviation		
	Study Group	**Norm**	***p* Value**
All students (*N* = 50)	6.02 ± 0.85		
Gender			
Male (*n* = 9)	17.78 ± 4.52	12.1 ± 5.9 (*n* = 926)	0.0054
Female (*n* = 41)	18.39 ± 6.34	13.7 ± 6.6 (*n* = 1,406)	< 0.0001
Age group (y)			
~19 to 28 (*n* = 40)	18.68 ± 6.35	14.2 ± 6.2 (*n* = 645)	< 0.0001
~29 to 55 (*n* = 10)	16.70 ± 4.32	12.89 ± 6.17 (*n* = 1,035)	0.0213
Experience working in health care			
Yes (*n* = 22)	17.36 ± 5.19		
No (*n* = 28)	19.00 ± 6.60		

Note. Age groups for the norm are classified as 18 to 29 years, 30 to 44 years, and 45 to 54 years, but were reclassified into two groups (18 to 29 years and 30 to 54 years) for similarity purposes to the age groups in our study.

Focus Groups

Students were positive and enthusiastic about interacting with simulated real patients, faculty, and other students during the simulation-based orientation. Students appreciated the relaxed and supportive learning environment and the opportunity to "practice with a real patient" prior to entering the clinical experience. Students reported improved self-confidence as a result of the simulation-based orientation and were overwhelmingly satisfied with the experience.

DISCUSSION

The study findings confirm the value of a simulation-based orientation using SPs for BSN students preparing to begin a clinical experience for the first time. The simulated learning experience provided students the opportunity to practice skills and behaviors on humans in a safe, controlled environment and resulted in decreased anxiety, increased knowledge, and increased self-confidence in behaviors and skills needed on the first clinical day. In addition, the demonstrated inverse relationship of anxiety and self-confidence substantiates the educational strategy of this simulation-based orientation to further

TABLE 7

State–Trait Anxiety Inventory Before and After Simulation-Based Orientation

	Mean±Standard Deviation		
	Trait Level	**Baseline State Level (Pretest)**	**Improvement in State Anxiety Level (Posttest)**
All students (*N* = 50)	38.59±6.74 (*n* = 49)[a]	44.98±9.88 (*n* = 49)[a]	–9.53±10.95*** (*n* = 47)[b]
Gender			
Male	38.11±7.39 (*n* = 9)	44.89±8.58 (*n* = 9)	–1.00±13.17 (*n* = 8)
Female	38.7±6.68 (*n* = 40)	45.00±10.25 (*n* = 40)	–11.28±9.73*** (*n* = 39)
Age group (y)			
19 to 28	39.03±7.12 (*n* = 39)	45.74±10.45 (*n* = 39)	–9.68±11.39*** (*n* = 38)
29 to 55	36.90±4.93 (*n* = 10)	42.00±6.83 (*n* = 10)	–8.89±9.40* (*n* = 9)
Experience working in health care			
Yes	36.64±5.48 (*n* =22)	43.05±8.01 (*n* = 22)	–7.20±10.86** (*n* = 20)
No	40.19±7.33 (*n* = 27)	46.56±11.07 (*n* = 27)	–11.26±10.89*** (*n* = 27)

[a] *One student did not complete the trait assessment and the state pretest assessment.*
[b] *Three students did not complete the state posttest assessment.*
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 8

Self-Confidence Assessment (SCA) Before and After Simulation-Based Orientation

	Mean±Standard Deviation	
	Baseline SCA (Pretest)	**Improvement in SCA (Posttest)**
All students (*N* = 50)	31.23±5.63 (*n* = 48)[a]	4.55±4.10*** (*n* = 47)[b]
Gender		
Male	29.50±5.50 (*n* = 8)	5.13±3.91** (*n* = 8)
Female	31.58±5.66 (*n* = 40)	4.44±4.17*** (*n* = 39)
Age group (y)		
19 to 28	30.68±5.83 (*n* = 38)	4.92±4.00*** (*n* = 37)
29 to 64	33.30±4.47 (*n* = 10)	3.2±4.37* (*n* = 10)
Experience working in health care		
Yes	32.90±4.60 (*n* = 21)	3.86±3.53*** (*n* = 21)
No	29.93±6.08 (*n* = 27)	5.12±4.49*** (*n* = 26)

[a] *Two students did not complete the SCA pretest assessment and one student did not answer one question.*
[b] *Three students did not complete the SCA posttest assessment.*
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

prepare nursing students for the clinical experience by decreasing or deleting the negative feedback mechanism that interferes with performance (Bremner et al., 2006).

Novice nursing students entering the clinical setting for the first time require baseline knowledge for safe practice. Although many researchers agree that clinical simulation at any level enhances critical thinking and empowers students (Cannon-Diehl, 2009; Gaba & Raemer, 2007; Wotton, Davis, Button, & Kelton, 2010), knowledge acquisition through clinical simulation has not been well established (Jeffries & Rizzolo, 2006; Levett-Jones, Lapkin, Hoffman, Arthur, & Roche, 2011). Our study supports recent research indicating that a significant gain in knowledge can occur through clinical simulation (Schlairet & Pollock, 2010; Weaver, 2011). Attention to details when planning the teaching–learning innovation, as well as careful implementation, as proposed by Jeffries (2005), may well explain the success of this study.

Students enjoyed the opportunity to practice with a real patient prior to entering the clinical setting. Having occasion to make mistakes without the possibility of causing patient harm or suffering a negative clinical evaluation freed students to focus on the learning experience, rather than on the consequences, transforming the learning motivation from negative to positive. A relaxed, supportive environment provided chances to problem solve and practice best approaches

in different clinical scenarios. Time outs, called by faculty during student–patient interactions and skill performance, afforded memorable teaching moments when nuances of human interaction important to nurse–patient trust, successful communication, and safe patient care were discussed.

Furthermore, students benefited from working in assigned groups of their peers, as this provided opportunities to learn directly through personal interaction with the patient, as well as through observation of other students' experiences. Feedback from faculty and peers immediately following performance provides an opportunity for reflection (Kolb, 1984) and significantly increases knowledge acquisition, as opposed to hands-on simulation alone (Shinnick, Woo, Horwich, & Steadman, 2011). By taking the focus off of the individual, the orientation provided the students with a less-threatening environment that contributed to easing student anxiety. It is likely that anxiety was further decreased as students became familiar with faculty expectations and the manner in which faculty approached the educational experience, negating the fear of evaluation that is present in the actual clinical setting. In addition, the simulation-based experience generated exhilarating energy and excitement.

TABLE 9

Self-Confidence Assessment Question-Level Analyses for Pretest and Posttest Difference

Skill	Mean ± Standard Deviation	*p* Value
Find information in medical record (*n* = 48)	0.17 ± 0.86	0.1061
Talk with assigned patient (*n* = 48)	0.40 ± 0.61	< 0.0001
Assess vital signs (*n* = 48)	0.33 ± 0.60	0.0003
Perform therapeutic touch (*n* = 48)	0.19 ± 0.67	0.0293
Obtain health history (*n* = 47)	0.51 ± 0.81	< 0.0001
Perform physical assessment (*n* = 48)	0.63 ± 0.67	< 0.0001
Remain calm if faced with unexpected situations (*n* = 48)	0.36 ± 0.73	0.0005
Identify nursing diagnoses (*n* = 48)	0.63 ± 0.79	< 0.0001
Develop plan for safe medication administration (*n* = 48)	0.52 ± 0.85	< 0.0001
Administer medications safely (*n* = 48)	0.48 ± 0.71	< 0.0001
Meet required expectations (*n* = 48)	0.38 ± 0.61	< 0.0001

Much like students, faculty benefited from an orientation that mimicked the students' first clinical week. Instructors had an opportunity to form relationships with students in a more relaxed atmosphere. Faculty were surprised to see the gap between what they thought the students knew and the students' ability to apply knowledge. The gap was particularly noticeable during the interview process, when students awkwardly struggled to obtain the patient's history on the first orientation day. However, faculty were pleased at the speed of progress in performance and increasing comfort of the students, noting marked improvement after only 1 day of participation. The actors (SPs) echoed faculty findings. The faculty considered the simulation-based orientation to have been successful, as indicated from feedback immediately following orientation, as well as later discussions about the benefits of the orientation to the students' transition to the clinical setting. Positive outcomes from this study prompted the revision of the orientation from a traditional classroom format to simulation-based learning for all students preparing to enter the clinical setting for the first time. The use of SPs was considered so effective that the cost is now absorbed in the budget for each semester. Experience has shown that one faculty facilitator, rather than two, is adequate for conducting the simulation-based experience.

STUDY LIMITATIONS

A limitation of this study is the small sample size; larger cohorts and replication of the study would strengthen the credibility of the findings. The instruments used to assess knowledge and self-confidence were developed based on the expertise of the faculty. Repeated use of these tools would allow predictive validity to be determined.

IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

Determining the effectiveness of a traditional lecture orientation compared with a simulation-based orientation may inform educators as to which teaching strategy is most appropriate for orienting students to a clinical experience. Clinical settings could benefit from the use of a simulation-based orientation, much like the one described. Skills specific to the setting, the medical records used in the facility, and the SPs representing typical patients seen on the unit introduced in a simulation setting could increase a newly hired nurse's self-confidence and decrease the stress often related to a new setting, and it could familiarize the nurse with the new setting.

CONCLUSION

This study confirms the value of simulation-based learning experiences, which provide opportunities for students to practice expected clinical behaviors and for faculty to observe students performing skills within a real-life context. The outcomes of this study support the use of clinical simulation as an effective strategy to enhance knowledge acquisition. A simulation-based experience occurring in a nonthreatening environment can lessen the anxiety of students preparing for their first clinical experience and increase self-confidence in the ability to perform expected clinical behaviors.

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