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Dedicated Education Unit Improving Critical Thinking and Anxiety

CE 1.5 ANCC Contact Hours

A Longitudinal Study

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Seventeen senior bachelor of science in nursing students participated in a dedication education unit. The longitudinal study findings were statistically significant ($p < .05$) in all areas of measure: Health Education System Inc, critical thinking scores, decreased anxiety, self-efficacy, self-confidence in clinical decision-making, and confidence. Findings from this study were translated into the clinical institution's onboarding process, the Practice Transition Program, which was restructured and accredited by the American Nurses Credentialing Center in 2019.

The Institute of Medicine (2011) and the American Association of Colleges of Nursing (2012) have established expectations for nurse educators to prepare students in core competencies related to delivery of safe, high-quality patient care. Nurse educators strive to prepare students as defined by the six Quality and Safety in Nursing Education competencies: patient-centered care, teamwork and collaboration, evidence-based practice, safety, quality improvement, and informatics. Faculty shortages within bachelor of science in nursing (BSN) programs, coupled with a decreasing availability of clinical placement sites and reduced clinical hours for nursing students, have placed burdens on existing nursing schools to meet these professional expectations (Masters, 2016; Smyer, Gatlin, Tan, Tejada, & Feng, 2015).

Incorporating dedicated education units (DEUs) as a collaborative teaching strategy has gained wider acceptance in academia, as well as in the clinical setting (Masters, 2016; Nardi & Gyurko, 2013). The DEU model is an academic–clinical partnership with the goal of optimizing student nurses' clinical education in an effort to facilitate transition from theory to safe nursing practice and ultimately improve patient quality outcomes (Dean et al., 2013). The DEU model improves student learning by positioning student nurses with clinically experienced nurses to prepare the students with skills, knowledge, and realities of graduate practice (Hunt, Milani & Wilson, 2015; Nishioka, Coe, Hanita, & Moscato, 2014). Through a DEU model, clinical skills are developed by redesigning the dynamic of the traditional clinical education model of a 1:10 faculty-to-student ratio to a collaborative partnership of a 1:2 registered nurse-to-student ratio (Dapremont & Lee, 2013). Nursing students educated through a DEU model, compared with a traditional model, reported more growth in nursing knowledge, clinical skills, clinical judgment, professional behavior (Mulready-Shick, Flanagan, Banister, Mylott, & Curtin, 2013), nurse-to-nurse collaboration (Moore & Nahigian, 2013), leadership (Galuska, 2015), and a higher degree of student satisfaction (Smyer et al., 2015).

Aspects of a DEU model, such as the discussion of clinical experiences with peers and seeking assistance from more experienced nurses, may promote more effective clinical decision-making in newly graduated nurses (Wiles, Simko, & Schoessler, 2013). Continued support by employers during the transition from newly graduated nurse to experienced nurse demonstrates positive effects.

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Findings suggest that employers need to focus on orientation, preceptorship, and residency programs to improve confidence, competence, job satisfaction, and critical thinking skills and reduce stress and anxiety for the transitioning nurse (Edwards, Hawker, Carrier, & Rees, 2015). While a review of the literature establishes educational and professional benefits of a DEU, the sustained influence of a DEU on student nurse anxiety, self-confidence in clinical decision making, and self-efficacy, through the onboarding process and transition to a newly graduated nurse, has not been widely explored (Edwards et al., 2015; Hill, Foster, & Oermann, 2015).

PURPOSE

The purpose of this longitudinal study was to evaluate the impact of a DEU model on outcome measures of critical thinking, anxiety, self-confidence in clinical decision making, self-efficacy, and confidence in senior BSN students with translation of these findings into nurse training and nurse professional development. The primary research question was as follows: Does a DEU model positively affect student nurse critical thinking skills, anxiety, self-confidence, self-efficacy, and confidence (referred to hereafter as "variables") as observed over time? The secondary research question was as follows: In what ways can the clinical institution incorporate DEU concepts into its graduate nurse onboarding program?

The study's longitudinal design allowed researchers to measure variables as student nurses transitioned to the role of newly graduated nurse. By following these BSN students through their first year of clinical professional practice, the authors expected to better identify, describe, and address transition shock. First identified by Kramer (1974), transition shock describes the evolution from newly graduated nurse to professional nurse and endorses the necessity of providing student nurses with realistic workplace expectations prior to graduation (Duchscher, 2009; Kim & Yeo, 2019). The success of a DEU model can be a step toward establishing, or improving, a transition to practice program (TTP) at a clinical institution. A strong TTP can improve patient outcomes, decrease negative safety practices and errors, reduce work-related stress, increase job satisfaction (Spector et al., 2015), and improve retention for first-year clinical nurses (Duchscher & Windey, 2018; Shatto & Lutz, 2017).

METHODS

This collaborative study was a quasi-experimental, within-subjects, repeated-measures longitudinal design using a convenience sample (N = 17 students) who all were assigned to the DEU unit. Four variables were measured at four time points for 17 participants. The planned analysis was based on an α of .05, power of .80, and an anticipated moderate effect size of 0.3.

The study took place during the spring semester of 2016 between a private liberal arts university senior BSN class and a single inpatient acute care unit within an American Nurses Credentialing Center (ANCC) Magnet-designated teaching hospital. The clinical unit participating in this study was chosen for its diverse patient population, to promote a comprehensive learning experience for the student nurses.

Each student nurse's experience took place during one 12-hour shift per week, for a period of 12 weeks on the DEU. Students were divided into two groups, having clinical on either Wednesday or Thursday of each week. In addition to faculty supervisors, students were paired with practicing experienced nurses (PENs) during clinical hours. The PENs received additional education related to collaboration, coaching skills, techniques to reduce anxiety, facilitation of critical thinking, and performing student evaluations. The interactions between PENs and students focused on the delivery of safe quality clinical care, student assessment and evaluation, nurse-to-nurse collaboration, and an introduction to the reality of practice.

Instruments

Nurse anxiety and self-confidence with clinical decision-making scale

The 27-item Nurse Anxiety and Self-Confidence With Clinical Decision-Making Scale (NASC-CDM) is a 6-point, Likert-type tool with two subscales measuring anxiety and self-confidence, with high internal reliability for each subscale: anxiety (α = .96) and self-confidence (α = .97; White, 2014). White (2009) identifies three characteristics of self-confidence as belief in positive achievements, persistence, and self-awareness. Outcome measures for BSN students were taken four times: a baseline of just before senior semester (T1), at graduation from the BSN program (T2), 6 months after graduation (T3), and 12 months after graduation (T4). For a detailed list of instruments and timing of measures, please see Table 1.

General self-efficacy scale

Self-efficacy was measured using the General Self-Efficacy Scale (GSES). Schwarzer and Jerusalem (1995) followed 1,660 adults over a 2-year period and found internal consistency reliability for the GSES ranging from .82 to .93. Expected concurrent validity was found to positively correlate to self-esteem (.52), internal control beliefs (.40), and optimism (.49) and negatively correlate to general anxiety (−.054), performance anxiety (−.42), shyness (−.58), and pessimism (−.28; Schwarzer & Jerusalem, 1995).

Casey-Fink Graduate Nurse Experience Survey

The Casey-Fink Survey measures graduate nurse confidence through five factors responsible for 46% of its variable scores and are provided with their respective reliabilities: stress (α = .71), patient safety (α = .79), support (α = .90),

TABLE 1 Outcome Measures and Measurement Timing

Concept	Instrument	Authors (Date)	Measurement Timing			
			T1	T2	T3	T4
Perceived self-efficacy	General Perceived Self-Efficacy Scale (GSES)	Schwarzer and Jerusalem (1995)	X	X	X	X
Critical thinking	HESI Critical Thinking Exam		X	X		
Confidence	Casey-Fink Graduate Nurse Experience Survey	University of Colorado Health (2006)	X	X	X	X
Anxiety	Nurse Anxiety and Self-Confidence with Clinical Decision-Making Scale (NASC-CDM)	White (2014)	X	X	X	X
National Council Licensure Examination pass rate	Standardized licensing test			X		

Note. Measurement timing was baseline, taken just before the senior semester (T1); graduation (T2); 6 months postgraduation (T3); and 12 months postgraduation (T4).

communication/leadership (α = .75), and professional satisfaction (α = .83). Confidence is measured relative to an individual's self-perceived readiness and comfort level toward handling multiple patient assignments (Casey, Fink, Krugman, & Propst, 2004). Therefore, it is broader than the self-confidence in clinical decision-making score measured with the NASC-CDM scale. The Casey-Fink Survey consists of yes/no and open-ended questions and Likert-type scale statements related to demographics, level of professional comfort, stress level, and job satisfaction (Casey et al., 2004). The survey was used with permission from the authors.

RESULTS

Seventeen students (n = 17) and 10 PENs (n = 10) formed teams to provide evidence-based nursing care during a 16-week semester, of which 12 weeks included clinical hours on the DEU. The majority of students were female (n = 16, 94%) and under 25 years of age (n = 12, 71%). The self-reported ethnicity of students reflected the diverse population of the university, although most students were White. Most of the students (n = 15, 88%) had prior experience within a hospital setting. All students graduated at the completion of the semester. For complete demographics, please see Table 2.

Table 3 provides details on the results of the Health Education System Inc. (HESI) critical thinking test, the NASC-CDM anxiety and self-confidence questionnaire, the GSES scores, and the Casey-Fink Survey. The HESI critical thinking results were derived using a paired t test. Key variables were analyzed using a repeated-measure analysis of variance (RM-ANOVA). The IBM Statistical Package for the Social Sciences (IBM Corp., 2018) was used for the RM-ANOVA data analytics.

The outcomes of the DEU students showed increased knowledge in general medical surgical and critical thinking as reflected on benchmark standardized HESI, examinations administered at the beginning and end of the senior semester, and, ultimately, on the National Council Licensure Examination (NCLEX). The average HESI critical thinking score pre-DEU was 831 and post-DEU was 912 and showed a statistically significant (p < .001) improvement from the beginning of the semester (T1) to graduation (T2). Of note, students in the DEU study had a 100% pass rate on the NCLEX, with all but one student passing at the 75-question minimum. According to the National Council of State Boards of Nursing (2016), the overall pass rate for first-time, United States-educated, BSN graduates was 87.8%.

Findings from the NASC-CDM anxiety survey showed a decrease in anxiety over time. Pairwise time comparisons

TABLE 2 Student Demographics (n = 17)

	Category	n (%)
Age	<25	12 (70)
	25–35	2 (12)
	Missing	3 (18)
Gender	Female	16 (94)
	Male	1 (6)
Ethnicity	White	6 (35)
	Black	1 (6)
	Hispanic	2 (12)
	Asian	3 (18)
	Other (*ns*)	1 (6)
	Declined/missing	4 (24)

TABLE 3 Outcome Measures: HESI Critical Thinking, Self-Efficacy, Confidence, and Anxiety

	T1 (Baseline)	T2 (Graduation)	T3 (6 Months Postgrad)	T4 (12 Months Postgrad)	*p*	Test Type
HESI						
General	867.2 ± 82.5	899.0 ± 104.0			.200	Paired *t* test
Critical thinking	831.8 ± 44.2	912.9 ± 42.2			<.001*	Paired *t* test
NASC-CDM anxiety	Mean = 66.47 ± 26.59	Mean = 44.82 ± 18.74	Mean = 42.36 ± 13.66	Mean = 36.54 ± 14.70		
Comparing T1 to T2					.747	GLM RM-ANOVA
Comparing T1 to T3					.077	
Comparing T2 to T3					1.000	
Comparing T2 to T4					1.000	
Comparing T3 to T4					.810	
Comparing T1 to T4					.028*	
NASC-CDM confidence	Mean = 122.53 ± 3.64	Mean = 149.41 ± 3.62	Mean = 151.71 ± 4.30	Mean = 152.00 ± 3.94		
Comparing T1 to T2					<.001*	GLM RM-ANOVA
Comparing T1 to T3					.059	
Comparing T2 to T3					1.000	
Comparing T2 to T4					1.000	
Comparing T3 to T4					1.000	
Comparing T1 to T4					<.001*	
General Self-Efficacy Scale	Mean = 34.65 ± 3.08	Mean = 37.82 ± 2.32	Mean = 37.50 ± 1.83	Mean = 37.92 ± 1.44		
Comparing T1 to T2					.050*	GLM RM-ANOVA
Comparing T1 to T3					.187	
Comparing T2 to T3					1.000	
Comparing T2 to T4					1.000	
Comparing T3 to T4					1.000	
Comparing T1 to T4					.152	
Casey Fink Confidence	Mean = 69.65 ± 3.64	Mean = 74.94 ± 3.61	Mean = 75.00 ± 4.30	Mean = 78.00 ± 3.94		
Comparing T1 to T2					.018*	GLM RM-ANOVA
Comparing T1 to T3					.202	
Comparing T2 to T3					1.000	
Comparing T2 to T4					1.000	
Comparing T3 to T4					.0228*	
Comparing T1 to T4					.001*	

Note. GLM = generalized linear model; NASC-CDM = Nurse Anxiety and Self-Confidence With Clinical Decision-Making Scale; RM-ANOVA = repeated-measures analysis of variance.
*$p < .05$.

indicate a statistically significant difference from baseline (T1) to 12 months after graduation (T4; $p < .05$). Although anxiety decreased at each time point, other differences noted were not statistically significant. The findings suggest that the student nurses experienced anxiety at decreasing levels throughout the DEU period and through transition to graduate nurse.

The NASC-CDM self-confidence indicated statistically significant results over time. Pairwise comparisons indicate the significance between baseline (T1) and graduation (T2; $p < .001$), as well as baseline (T1) through 12 months after graduation (T4; $p < .001$). These results indicate a significant increase in self-confidence related to clinical decision-making acquired during the DEU that increased through the transition from student to graduate nurse.

Self-efficacy as measured by the GSES showed improvement over time, with some variation. The biggest increase was observed between baseline (T1) and graduation (T2; $p < .05$). No other differences in self-efficacy reached statistical significance. This pattern of a positive increase was observed in both self-confidence and confidence.

The results of the Casey-Fink confidence survey demonstrated improved confidence at each time point. Statistical significance in confidence was observed between baseline (T1) and at graduation (T2; $p < .05$). Statistical significance was also observed between baseline (T1) and 12 months after graduation (T4; $p < .001$). This finding is similar to increases observed in self-confidence as measured by NASC-CDM, thus providing support that the findings are robust.

DISCUSSION

The primary research question explored was as follows: Does a DEU model positively affect student nurse critical thinking skills, anxiety, self-confidence, self-efficacy, and confidence as observed over time? The findings of this DEU study (see Figure 1) demonstrate an increase in critical thinking skills and a decrease in student nurse anxiety levels, as well as an increase in self-confidence, self-efficacy, and confidence from baseline (T1) through 12 months after graduation (T4). The interplay of reduced anxiety and sustained self-efficacy supports critical thinking skill improvement and performance success (Kramer, 1974; Mulready-Shick et al., 2013; Spector et al., 2015).

Confidence levels, as measured by both the Casey-Fink Survey (confidence) and the NASC-CDM (self-confidence), indicated improvement from baseline (T1) to 12 months after graduation (T4). Attention to professional growth (self-efficacy and confidence/self-confidence) is needed throughout the student and transition phases as nurses build new skills. These findings provided the authors with an identified opportunity for improvement in the process of professional development, particularly in the transition from student to professional nurse (Moore & Nahigian, 2013; Mulready-Shick et al., 2013; Smyer et al., 2015; Wiles et al., 2013). The DEU participants indicated less anxiety and an increase in self-efficacy, self-confidence, and confidence during the DEU.

The secondary research question was as follows: In what ways can the clinical institution incorporate DEU concepts into its graduate nurse onboarding program? Lessons learned from this DEU study have been incorporated into the newly graduated nurse training program at the clinical institution. The graduate nurses are purposefully familiarized with unit process, procedures, and culture, as well as with the interdisciplinary healthcare team, to reduce anxiety. Frequent assessment and a more focused evaluation of clinical skills and clinical judgment have been incorporated into the onboarding process. Nurse-to-nurse collaboration is strongly encouraged by pairing newly graduated nurses with mentors on their unit to quickly identify learning opportunities.

The clinical institution incorporated enhanced processes involving acculturation, collaboration, stress reduction,

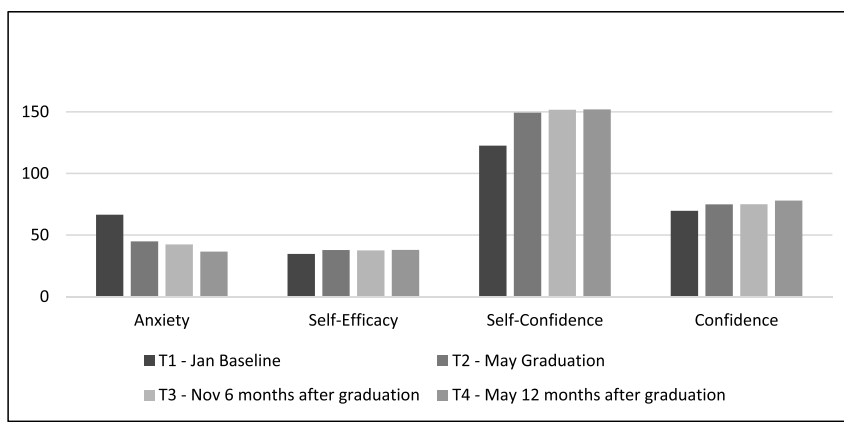

FIGURE 1. Self-reported anxiety, self-efficacy, self-confidence, and confidence over time.

clinical skills, decision-making, and evidence-based practice into its nurse onboarding package, the Hire Learner Program. In 2019, the clinical institution's reenvisioned comprehensive Hire Learner Program was accredited by the ANCC as a Practice Transition Program.

Limitations

There are several limitations to this study. Participants were not randomly selected and were aware they were participating in a study evaluating a clinical education design. Improvements in anxiety, self-confidence, and self-efficacy may be due, in part, to maturation of the student during the semester, which is anticipated, as well as carryover effects and testing effects. These limitations are inherent with longitudinal studies (Bauer, Gottfredson, Dean, & Zucker, 2013). Although a randomized comparative design would be ideal, a control group was not used in this study due to the small size of the available sample. Although the sample size was small ($N = 17$), a total of 272 observations were included. A post hoc analysis of effect size using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a large effect size of 0.654 was obtained.

CONCLUSION

The DEU experience provided a productive and successful collegial atmosphere for both student learning and clinical nurse professional growth. Critical thinking, self-confidence in clinical decision-making, self-efficacy, and confidence increased while anxiety decreased. Best practices identified through the DEU model had a positive impact on individual participants and the clinical institution's onboarding program.

Future research should explore the specific role and interactions of variables studied as they relate to easing the transition from student nurse to successful nursing professional.

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