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The Impact of Supplemental Simulation on Newly Licensed Registered Nurses

Aimee A. Woda
Marquette University, aimee.woda@marquette.edu

Kristina Dreifuerst
Marquette University, kristina.dreifuerst@marquette.edu

Mauricio Garnier-Villarreal
mauricio.garniervillarreal@marquette.edu

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Aimee Woda
Marquette University College of Nursing, Milwaukee, WI
Kristina Thomas Dreifurst
Marquette University College of Nursing, Milwaukee, WI
Mauricio Garnier-Villarreal
Marquette University College of Nursing, Milwaukee, WI

Abstract

Background

Challenges exist for nursing students as they transition to their role as newly licensed registered nurses (NLRNs) due to a mismatch between their perceived readiness and role competency and the demands of the practice environment. Simulations with debriefing may be one strategy to better prepare students for the role of a NLRN. The purpose of this study was to explore whether supplementing traditional clinical experiences with simulation versus substituting simulation for traditional clinical experiences had an impact on NLRNs' perception of competence, work stress, and job satisfaction.

Sample

A convenience sample of 115 NLRNs from two successive graduating classes in a Midwestern traditional baccalaureate nursing program who participated in the same curriculum with different uses of simulation were recruited.

Methods

A quasi-experimental design was used to compare the two groups of NLRNs at six months of practice.

Results

The NLRNs with supplemented simulation had higher job satisfaction.

Conclusion

These results suggest that programs that use simulation to supplement traditional clinical experiences may lead to increased job satisfaction in NLRNs.

Keywords

Simulation; transition to practice; newly licensed registered nurse; competence; work satisfaction; job stress

Key Points

- Simulation, in addition to traditional clinical experiences, may have a positive impact on the job satisfaction of new graduates.
- Supplemental simulation, in addition to traditional clinical experiences, may not impact the perception of competency or work stress.
- Supplemental simulation may not be effective or involve effective use of resources, supporting the use of substituted simulation.

The education-practice gap associated with newly licensed registered nurses (NLRNs) was first reported in the nursing literature in the 1970s, noting that new graduates were not ready for practice (Kramer, 1974). Educators and health care administrators have escalated efforts to address this issue using a variety of onboarding strategies, although these concerns continue (Friday et al., 2015, Rush et al., 2013). In addition, schools of nursing have deployed strategies to provide better learning opportunities to students to prepare for the realities of practice such as new nurse competencies, job satisfaction, and retention (Rush et al., 2013). The aim of this study was to explore the impact of one of these strategies, supplemental simulation, on the NLRNs' perception of job satisfaction, work stress, and competency. Substituting clinical hours for simulation has been well documented (Bland et al., 2011, Hayden et al., 2014, McGough and Heslop, 2016), yet the impact of using simulation experiences to supplement traditional clinical hours has not been studied.

In response to the perception that nursing students are not fully practice ready, schools of nursing have re-examined existing pedagogical paradigms and strategies (Bland et al., 2011). Supplemental simulation has the potential to expand clinical competence, increase self-confidence, and decrease anxiety by providing nursing students a safe and controlled environment to confront a variety of patient scenarios and to develop their thinking and decision-making abilities which could positively impact the documented issues around transition to practice (Bias et al., 2016, McGough and Heslop, 2016, Spiva et al., 2013). Simulation with debriefing has come to the forefront to build, develop, and sustain students' clinical practice. Using simulation with an evidence-based debriefing method provides

both debriefers and learners with an intentional systematic process that leads to positive learner outcomes (Dreifuerst, 2012, Mariani et al., 2014). Therefore, the following research questions were included for this study: (a) Is there a correlation between perceived competency, work stress, and job satisfaction in NLRNs? (b) What is the impact of supplemental simulation on perceived competency, work stress, and job satisfaction in NLRNs compared with those who did not have supplemental simulation?

Synthesis of Literature

Challenges exist for NLRNs due to a mismatch between their perceived readiness, role competency, and the demands of the practice environment (Liaw et al., 2014b, Mellor and Greenhill, 2014). It has been reported that 90% of academic deans felt that their graduates were prepared for practice compared with only 10% of hospital nurse administrators (Berkow et al., 2008, Spector et al., 2015). The retention rate within the first year of practice is reported at 83% for NLRNs (Blegen, Spector, Lynn, Barnsteiner, & Ulrich, 2017). This may be due to NLRNs' reports of being overwhelmed, underprepared, and anxious as they discover that their knowledge and skills do not match the responsibilities of a practicing nurse, leading to job stress, job dissatisfaction, and high turnover (Liaw et al., 2014b, Mellor and Greenhill, 2014, Spiva et al., 2013). Rush et al. (2013) suggested that an emphasis on skill development by NLRNs may enhance competence and improve retention rates.

The use of simulation increases patients' safety (Mellor and Greenhill, 2014, Sears et al., 2010) and provides students opportunities to develop both cognitive and psychomotor skills needed as an NLRN (Cordeau, 2012). Liaw et al. (2014a) implemented a Simulated Professional Learning Environment program, which included the use of multiple simulation scenarios within the last year of a nursing program to aid in the transition to practice. Overall, students felt more prepared for practice when they graduate. Despite the increased use of simulation as a component of nursing curricula, there is limited empirical evidence documenting how much simulation is needed to achieve competency, decrease work stress, and increase job satisfaction among NLRNs. The National Council of State Boards of Nursing National Simulation Study demonstrated that up to 50% of traditional clinical experience time could be substituted with simulation with no significant difference in the National Council Licensure Examination scores or the ability to demonstrate appropriate nursing care (Hayden, et al., 2014). However, the impact of supplementing simulation with traditional clinical experiences compared with substituting simulation for traditional clinical experiences on NLRN's transition to practice has not been reported.

In this study, the National League for Nursing (NLN)/Jeffries Simulation Theory (Jeffries, Rodgers, & Adamson, 2015) and the International Nursing Association for Clinical Simulation and Learning 2013 Standard of Best Practice Guidelines provided the framework for the study and underpinned the development of the simulations used for the intervention. The NLN/Jeffries Simulation Theory includes five conceptual components, such as participant, facilitator, educational practices, design, and outcomes, which explicate the phenomenon. The NLN/Jeffries Simulation Theory articulates and describes the relationship of these conceptual components and how they inform the study outcomes related to closing the education-practice gap.

Method

This quasi-experimental study compared two groups of NLRNs at four to six months of practice. Two cohorts of baccalaureate nursing program graduates from a Midwestern university who had taken three medical-surgical practicum courses during the final four semesters of their eight-semester traditional baccalaureate nursing program were compared four to six months after graduation. Cohort one graduates were NLRNs who had simulation that was substituted for the traditional clinical time. Cohort two graduates were NLRNs who participated in a total of 14 supplemental simulations in addition to their traditional clinical requirements. The course curriculum was identical for both cohorts except for the simulation model (Table 1). For both cohorts, a generic debriefing method based on plus delta was used, focusing on what went well and what could be improved in the future. As simulation was new to the program, most instructors had little to no prior experience working as a simulation instructor. All instructors were trained with an ongoing support from the simulation center staff and the course leads who were all experienced with clinical education.

Table 1. Comparison of Simulation Models Between Cohorts

Clinical Area	**Cohort 1**			**Cohort 2**		
	Traditional Clinical Hours	**Number and Topic of Substituted Simulation**	**Number and Topic of Supplemental Simulation**	**Traditional Clinical Hours**	**Number Substituted Simulation**	**Number and Topic of Supplemental Simulation**
Chronic Illness	1 day/week × 14 weeks	0	0	2 day/week × 7 weeks	0	4; heart failure, chronic obstructive pulmonary disease, asthma, pain
Acute Illness	1 day/week × 14 weeks	1; heart failure	0	2 day/week × 7 weeks	0	4; septic shock, acute myocardial infarction, knee arthroplasty, heart failure
Senior Clinical	104 hours with preceptor	0	3; delegation, conflict, end of life	2 day/week × 7 weeks	0	6; mental health, end of life, conflict, multipatient, code, interprofessional
Total Number of Simulations		1	3		0	14

After obtaining institutional review board approval, an electronic survey was emailed to potential participants from these two groups of nursing graduates, six months after graduation, inviting them to be involved in the study. This recruitment strategy used the Dillman Total Design Survey Method. This method involved using a set pattern of contact with the participants (Hoddinott & Bass, 1986).

Instruments

The survey combined three established instruments, which were used in their entirety, with permission from the National Council of State Boards of Nursing. The Work Stress Survey (Spector, et al.,

2015) assessed perceptions of work stress with a four-question four-point Likert-type scale (Cronbach's α = 0.78). The Brayfield & Rothe Index of Job Satisfaction (Brayfield & Rothe, 1951) (Cronbach's α = 0.88) contains six questions on a five-point Likert-type scale (disagree to agree) assessing job satisfaction. Finally, to establish the NLRNs' self-perception of competency, the Overall Competency tool from the National Simulation Study was used. Participants rated themselves on six items from disagree to agree using the overall scale (Cronbach's α = 0.88), (Spector et al., 2015).

Findings

Data from the survey were analyzed with the R software (R Core Team, 2017) from the Structural Equation Modeling framework (Kline, 2015), with the R packages lavaan (Rosseel, 2012), and semTools (Jorgensen, Pornprasertmanit, Schoemann, & Rosseel, 2018). From two hundred twenty-five potential participants, 115 NLRNs who were employed for at least four months consented to participate (cohort 1: n = 63; cohort 2: n = 52). The mean age was 22 years in both cohorts, with most participants being female (cohort 1: n = 59; cohort 2: n = 48). Sixty-six percent of nurses in cohort 1 were employed less than six months, with the rest being employed for more than six months. In cohort 2, 100% of participants were employed less than six months. There was a statistically significant difference in the length of employment between cohort 1 and 2 ($p < .05$).

Within the survey instruments, there were three constructs of interest: (a) work stress, (b) job satisfaction, and (c) perceived competency (Table 2). The estimates of the reliability of these factors were 0.774, 0.910, and 0.924, respectively, demonstrating high reliability for all the constructs of interest. Using confirmatory factor analysis, the correlation between perceived competency, work stress, and job satisfaction among NLRNs was determined ($p < .001$). The correlation between work stress and job satisfaction was large and skewed negative ($r = −0.659$, $p < .001$) in this sample, demonstrating that when participant's work stress increased, their job satisfaction decreased. The work stress correlation with perceived competency was also large and skewed negative ($r = −0.526$, $p < .001$), demonstrating that when a participant's work stress increased, their perceived competency decreased. Finally, there was a medium-sized correlation between job satisfaction and perceived competency ($r = 0.408$, $p < .001$), indicating that when a participant's job satisfaction increased, their perceived competency also increased.

Table 2. Factor Correlations and Construct Mean Comparisons

Factor Correlations				
Construct	**Work Stress**	**Job Satisfaction**	**Competency**	
Work Stress	1			
Job Satisfaction	−0.659*	1		
Competency	−0.526*	0.408*	1	
Construct Mean Comparison				
Construct	Group 1 Mean (SE), N = 63	Group 2 Mean, N = 52	*p* Value	Cohen's d (95% CI)
Work Stress	−0.003 (0.240)	0	.991	−0.001 (−0.237, 0.234)
Job Satisfaction	−0.576 (0.210)	0	.006	−0.277 (−0.459, −0.094)
Competency	0.117 (0.205)	0	.567	0.059 (−0.141, 0.258)

Note. CI = confidence interval; SE = standard error of mean.
$*p < .001$.

To answer the second research question, the latent means were compared between groups to determine if there was a difference in the group's perception of competency, work stress, and job satisfaction. The mean differences demonstrated that the group with supplemental simulation had higher job satisfaction than the group without supplemental simulation, with a small to medium effect size ($p = .006$; d = 0.277). The other factors, work stress ($p = .991$) and overall competency ($p = .567$), were not significantly different.

Discussion

It is known that up to 50% of traditional clinical experience time could be substituted with simulation, with no significant difference in student outcomes (Hayden, et al., 2014), but there continues to be a lack of information on how supplemental simulation impacts the NLRN. Although anecdotal reports by NLRNs suggest that participation in simulation contributes to their overall competence (Bailey & Mixer, 2018), a knowledge gap exists regarding how simulation impacts competence or transfer of knowledge in the NLRN. Furthermore, how supplemental simulation may impact the job satisfaction, work stress, and overall perception of competency of NLRNs has not been explored. This study found that the group with supplemental simulation in addition to traditional clinical experiences presented higher job satisfaction scores 4 to 6 months after graduation than the group which had substituted simulation. Factor correlations associated with this finding demonstrated that there was a negative correlation between work stress, job satisfaction, and competency. Therefore, participants with an elevated level of work stress were less satisfied with their job and perceived a lower level of competency. Participants with higher job satisfaction also perceived a higher level of competency. This is not surprising and supports prior studies that reported participation in simulation improves decision-making skills (Woda, Gruenke, Alt-Gehrman, & Hansen, 2016) and self-confidence (Lubbers & Rossman, 2016) and is beneficial in the transition to professional practice (Bailey & Mixer, 2018).

Many factors, such as orientation, staffing, nurse residency programs, or type of health care setting, in this retrospective study could not be controlled, which might have impacted job satisfaction of NLRNs. For example, Blegen et al. (2017) reported that hospital characteristics played a larger role in NLRN retention than individual nursing characteristics, with the highest retention rates observed in urban and Magnet®-designated health care systems. Additional research is necessary before these findings can be generalized.

Conclusion

The aim of this study was to explore the impact of supplemental simulation on the NLRNs' perception of job satisfaction, work stress, and competency. Higher job satisfaction was noted in the group with supplemental simulation; however, there was no difference in the perception of competence or work stress. These results suggest that participation in programs that use supplemental simulation may lead to increased job satisfaction in NLRNs. Given the high attrition rates of NLRNs (Blegen, et al., 2017), further research using a longitudinal, prospective, randomized methodology to study the impact of supplemental simulation and substituted simulation on NLRNs is warranted.

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