THE EFFECTS OF GROUP SIZE ON OUTCOMES OF PERINATAL SIMULATION AMONG STUDENT NURSES

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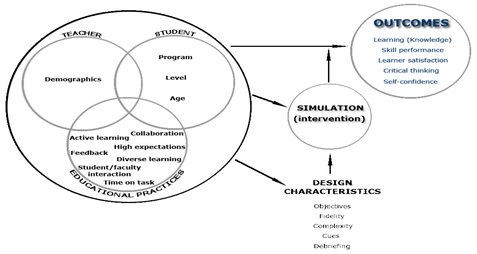
Purpose

This work was done in conjunction with the Fairbanks Simulation Institute. Using the NLN simulation model as a framework(Jeffries, 2005), the purpose of this pilot study was to determine how two perinatal simulations supported learning, satisfaction, and confidence among BSN students and to determine if outcomes varied by simulation group size.

Background

Simulation has been proposed as a safe way for nursing students to gain clinical experience that they might not otherwise receive, but there are many unanswered questions on how best to implement this teaching and learning strategy. In a multi-site simulation trial, Jeffries and Rizzolo (2006) found that when student were assigned to the role of an observer in a simulation group of 4, they learned as much as the students assigned to more active roles. Those researchers felt an additional student could easily participate in a simulation as an observer without compromising learning. Still nursing instructors supervise up to10 students at a time in the clinical setting (Indiana State Board of Nursing, 2008). For those instructors, implementing simulations with groups of even 5 students poses the problem of what to do with the remaining students. What remains unknown is if simulations can still produce effective learning when entire clinical groups of 10 students participate

Simulation Model



Method

This IRB approval study used a convenience sample of 54 BSN students enrolled in a maternal-newborn clinical course. All students participated in the nursing lab in a postpartum hemorrhage simulation using a Vitalsim manikin and a high-risk newborn simulation using a CPR style manikin. Twenty-nine students were assigned to participate in groups of 9-10 with up to 7 observers. Twenty -five students were assigned to groups of 5 with 2 observers. Data were collected on the NLN *Simulation Design Scale (Student version),* and the NLN *Student Attitudes toward Current Instructional Methods Using Simulation* tool . Data were analyzed using independent *t*-tests on PASW version 17.

Table 1. Simulation Design Scale Scores for the Postpartum Hemorrhage Scenario

Simulation Design Elements		*N*	Mean	*SD*	*t*	*df*	Sig (2-tailed)
Objectives/ Information	Group 5	24	4.56	.35	3.413	47	.001***
	Group 10	25	4.18	.41			
Support	Group 5	24	4.21	.68	1.066	46	.292
	Group 10	24	4.02	.57			
Problem Solving	Group 5	23	4.35	.39	1.158	46	.253
	Group 10	25	4.21	.43			
Feedback/ Reflection	Group 5	23	4.89	.18	2.896	46	.006**
	Group 10	25	4.59	.46			
Fidelity (Realism)	Group 5	23	4.73	.42	2.171	46	.035*
	Group 10	25	4.38	.68			
Perceptions of Importance		*N*	Mean	*SD*	*t*	*df*	Sig (2-tailed)
Objectives/ Information	Group 5	24	4.66	.44	1.645	47	.107
	Group 10	25	4.44	.51			
Support	Group 5	24	4.22	.80	-.211	47	.834
	Group 10	25	4.26	.66			
Problem Solving	Group 5	23	4.44	.51	1.400	45	.168
	Group 10	24	4.25	.43			
Feedback/ Reflection	Group 5	23	4.69	.39	1.587	45	.120
	Group 10	24	4.51	.42			
Fidelity (Realism)	Group 5	23	4.73	.51	1.847	45	.071
	Group 10	24	4.43	.59			

*p<.05, **p<.01, ***p<.001

Table 2. Simulation Design Scale Scores for the High-Risk Newborn Scenario

Simulation Design Elements		*N*	Mean	*SD*	*t*	*df*	Sig (2-tailed)
Objectives & Information	Group 5	24	4.45	.45	2.945	47	.005**
	Group 10	25	4.05	.48			
Support	Group 5	24	4.41	.53	1.381	47	.174
	Group 10	25	4.19	.60			
Problem Solving	Group 5	24	4.52	.40	2.998	45	.004**
	Group 10	23	4.15	.43			
Feedback/ Reflection	Group 5	24	4.76	.37	2.432	46	.019*
	Group 10	24	4.45	.48			
Fidelity (Realism)	Group 5	24	4.68	.43	2.120	46	.039*
	Group 10	24	4.35	.63			
Perceptions of importance		*N*	Mean	*SD*	*t*	*df*	Sig (2-tailed)
Objectives & Information	Group 5	24	4.69	.35	2.430	47	.019*
	Group 10	25	4.36	.57			
Support	Group 5	24	4.63	.42	2.025	47	.049*
	Group 10	25	4.33	.60			
Problem Solving	Group 5	24	4.56	.37	2.552	46	.014*
	Group 10	24	4.24	.48			
Feedback/ Reflection	Group 5	24	4.81	.32	3.370	46	.002**
	Group 10	24	4.41	.47			
Fidelity (Realism)	Group 5	24	4.77	.51	2.529	46	.015*
	Group 10	24	4.41	.45			

*p<.05, **p<.01, ***p<.001

Results

Surveys were returned by 52 students. Three surveys were missing more than 10% of data and were excluded from the study . All participants were single females with a mean age of 21.1 years (SD=.62). Most participants reported being Caucasian (96%).

Mean scores for all study variables were >4 on 5-point scales indicating both simulations were well received by all participants. Table 1 shows the smaller groups rated three design elements higher than the larger groups for the postpartum hemorrhage scenario. No significant differences were found on the importance scale . Table 2 shows that for the high -risk newborn scenario, the smaller groups rated every design scale item higher than the larger groups except for the element of support. Table 3 shows satisfaction was higher in smaller groups, but self-confidence did not differ significantly.

Table 3. Attitudes toward Current Instructional Method Using Simulation

Post-Partum Hemorrhage		*N*	Mean	*SD*	*t*	*df*	Sig (2-tailed)
Satisfaction with current learning	Group 5	24	4.65	.39	2.806	47	.007**
	Group 10	25	4.29	.48			
Self-confidence In learning	Group 5	24	4.24	.34	1.094	47	.279
	Group 10	25	4.11	.45			
High-Risk Newborn		*N*	Mean	*SD*	*t*	*df*	Sig(2-tailed)
Satisfaction with current learning	Group 5	24	4.62	.41	2.675	46	.010**
	Group 10	24	4.27	.48			
Self-confidence In learning	Group 5	24	4.31	.33	46	.042	.246
	Group 10	24	4.06	.47			

*P<.05,**p<.01,***p<.001

Discussion

•This study found that students viewed both simulations as effective teaching and learning methods even though lower fidelity equipment was utilized in an open room not specifically designed for simulation.

* Good outcomes were seen in all groups suggesting that instructors can feel good about student learning even when scheduling may require that entire clinical groups must participate in a given simulation.

* Students expressed in the debriefing that the high-risk newborn simulation was more difficult as they had very limited exposure to newborns. The higher simulation design scores for the smaller high-risk newborn groups suggest that smaller groups may be most helpful when learning is new or challenging, but more research is needed.

* Video streaming allows live feeds to even larger groups. More studies are needed on learning outcomes of observers in and out of simulation room.

References

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