One Minute Simulation: A Pilot Study

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Active learning strategies are a valuable part of nursing education. They relieve tedium in the classroom and provoke higher learning. Such strategies also enable students to focus on problem solving and invoke experiential learning. One Minute Simulation offers instructors a means to use simulation in the regular classroom setting, to keep students actively engaged in learning, and practice clinical reasoning.

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The overarching goal in active learning for nursing education is the teaching of clinical reasoning. Clinical reasoning is the ability to anticipate and prevent complications through an effective nursing plan of care. Effective nursing care requires the nurse to analyze patient complaints, symptoms, medical history, and diagnoses to maintain current levels of function, restore health, or prevent poor outcomes (Benner, Hughes, and Sutphen, 2008). Active learning also creates opportunities for nursing instructors to avoid content saturation as more programs implement conceptual models (Giddens, 2007; Institute of Medicine, 2010). Simulation is effective; and it can even be used as a substitute for traditional hospital based clinical experiences (Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries, 2014). Simulator fidelity is often associated with simulation complexity, however the costs involved for high fidelity simulation may not always be justified when other options exist (Almeida et al, 2018). Other options for simulation in programs with limited resources may thus be warranted. There is little research available on simulation strictly in the classroom, with no lab component, and simulation activities connected with classroom learning often involve leaving the classroom itself (Turrise, 2019; Berndt et al, 2015).

The One Minute Simulation activity strives to bring Simulation out of the Lab, into the classroom setting to help students practice clinical

reasoning in a real time active learning exercise on patient care and does not require high fidelity. The activity is simple: students are given a very basic scenario, and then are chosen randomly from the class to deliver one minute of simulated care. The instructor adjusts the patient condition based on the care given and documents these changes on the board for the class to see. After one minute another student is chosen until all or most students have participated in the case. The instructor then debriefs the class on how the case went, the choices that were made, why those choices were made, and how the patient responded.

Since developing the basic structure of One Minute Simulation, the activity has been performed in the classroom consistently since 2014. In the Spring Semester of 2017, a study was conducted with a class of nursing students, to determine the impact on student clinical reasoning through performance on answering National Licensure Examination for Registered Nurses (NCLEX-RN or NCLEX) style questions, and on student confidence, after participating in a One Minute Simulation hip fracture scenario.

Methodology

Sixty-four second semester nursing students in a two-year associate degree nursing program participated in the study. The study was conducted over the course of two classroom days during instruction on Perioperative care (preoperative, intraoperative, and postoperative nursing). Institutional Review Board approval was obtained prior to conducting the study. Content delivery took place over two classroom days of two- and one-half hours class time. Prior to class, students were provided with textbook readings on the topic, and note taking handouts based on the Power Point to be used in Lecture. On Class Day One, each student was given an index card with a number from one to sixty-four. The students were instructed to keep this card and bring it to class on Class Day 2.

Prior to the start of classroom instruction on Day 1, a 10-item quiz on perioperative nursing care, including a confidence question, was distributed to the students, with scantrons. Information on the research study on One Minute Simulation was given to the students verbally and in writing. Completing the quiz was considered consent to participate, and students were informed they could withdraw their consent at any time. To maintain anonymity and confidentiality, a numbered card was distributed to each student as a unique identifier of that student-participant. Fifty-three

students participated in the pre-test portion of the student, and forty-two students participated fully in the study through the post-test phase.

Following the administration of the pre-class quiz, the students received classroom instruction on perioperative care through the remainder of Class Day 1, and the first hour of Class Day 2. Following the completion of classroom instruction, the One Minute Simulation activity was conducted. The scenario focused on the care of a 64-year-old female who suffered a left hip fracture after a fall. The case followed preoperative care given in the Emergency Room, through surgery, and postoperative care on the surgical floor. Students were randomly chosen using the numbers they were assigned at the start of Class Day 1 to deliver one minute of simulated nursing care. Students were expected to use clinical reasoning to determine the course of the simulation to conduct appropriate nursing assessments, implement perioperative care including the pre-op checklist, identification of correct surgical sites and the time out in the operating suite; post anesthesia care, and routine post-operative stabilization and care, including patient teaching. Faculty provided additional data to unfold the scenario in response to the actions the students did, or did not, take. In addition, students had the option to "phone a friend" if they encountered difficulties with decision-making. Following the simulation scenario, which lasted approximately 30 minutes, a debriefing discussion of the simulation and its outcomes were held. Due to the limited time and the size of the class, not all students delivered simulated care. Following the debrief, a second copy of the same original quiz was re-administered to the class, as a posttest.

Results

Pretest and posttest scores on the quiz were anonymously compiled. SPSS software was used to run descriptive statistics on the 42 students-participants (see Table 1). Before conducting an analysis of variance (using T-test), data were first screened for missing values and outliers, which were omitted from the analysis. Consequently, the number of students-participants was reduced by two cases, resulting in a sample size of n = 40.

Table 1. Paired Samples Statistics

Test Mean	*N*	*Mean*	*Standard Deviation (SD)*	*Stand.Error*
Pretest	40	2.60	1.01	0.16
Posttest	40	3.83	0.68	0.11

A paired samples T-test was implemented in this study, for which the first assumption of random sampling was impossible to satisfy, given that students self-registered to class. However, participants were compared to determine similarity of demographics, and pretest scores. Students were also assigned randomized numbers within the same group.

Given the small size of participants (n = 40), the second assumption of normality was tested using both skewness and kurtosis statistical values (D'Agostino, et. al., 1990), and graphical Q-Q plot (see Figure 1). In these tests, values from the scores difference between the pre- and posttest were plotted against the expected values from the normal distribution. The reasonably straight line from these scores difference suggests a normal distribution.

The third assumption is that of adequate sample size. The students' group has more than 30 cases and is therefore sufficient for the analysis.

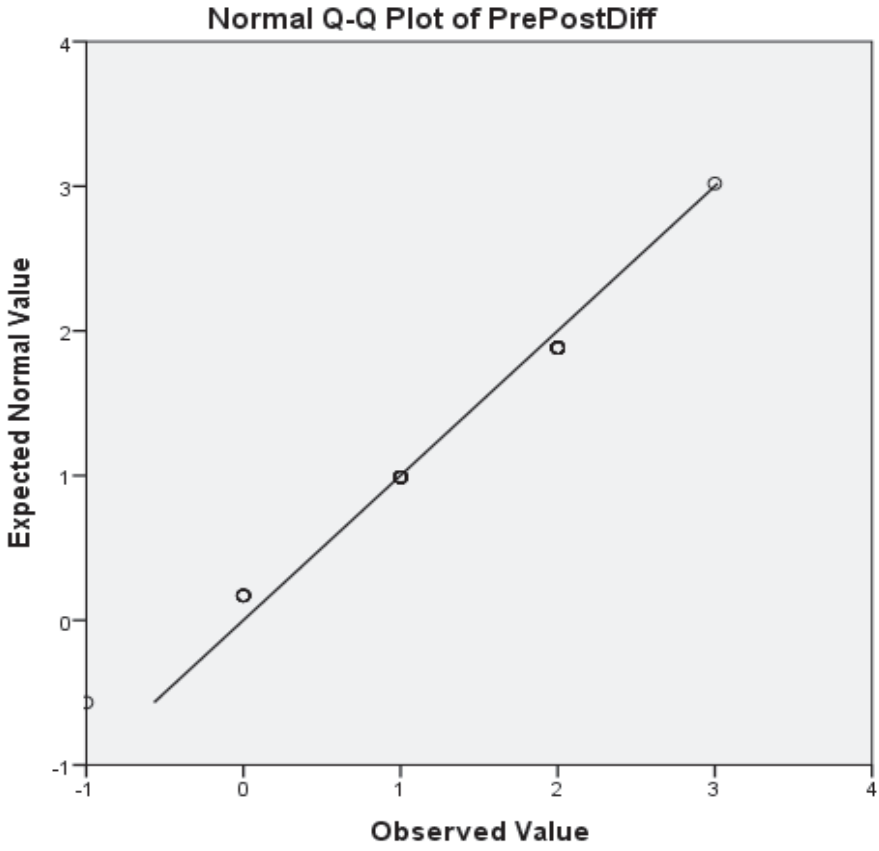

Figure 1. Q-Q Plot of Normality of the Pre-Posttest Difference

After conducting a paired sample T-test for the pretest and the posttest data, the results in Table2, revealed a statistical significance between both the pre- and posttest ($p = .003$), within a 95% confidence interval. The mean pretest score was 2.60 (SD 1.01), and the posttest score was 3.83 (SD 0.68). Due to the One Minute Simulation, students-participants scored higher on the posttest quiz as contrasted with the pretest one.

Table 2. Paired Samples T-test

	Paired Differences							
				95% Conf. Int. of Diff.				
	Mean	*Std. Dev.*	*Std. Error Mean*	*Lower*	*Upper*	*t*	*df*	*Sig*
Pre-Posttest	–1.23	0.83	0.13	–1.49	–0.96	–9.32	39	.00

Discussion

The major finding of this research study was the added value of the One Minute Simulation on students' performance on the 10-item quiz on perioperative nursing care. Students scored 1.23 points (about 47%) higher on the posttest than on the pretest. This is not only a significant difference, but one with practical implications. The posttest scores indicate that the students improved their critical thinking and clinical reasoning skills, while implementing the One Minute Simulation technique in a simulated hip fracture scenario. Based on the results of this study, this pedagogical technique is conformed to the conceptional expectations in nursing education and recommended for use in monotonous or heavy content subject modules.

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