

USING SIMULATION IN NURSING PHD EDUCATION: FACILITATING APPLICATION OF RESPONSIBLE CONDUCT OF RESEARCH PRINCIPLES

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Simulation is a standard clinical nursing educational approach; however, simulation is rarely used in nonclinical nursing education. In doctor of philosophy (PhD) programs, ethical content about responsible conduct of research (RCR) is traditionally didactic, presented early in the program of study. Ethics content merits review before students begin the dissertation phase; thus, the purpose of this project was to design and implement simulated scenarios to help students apply RCR principles prior to beginning independent research.

Two scenarios were developed: (a) a potential protocol change discussed in a research team meeting and (b) an in-home data collection experience with an elderly participant and her daughter. Actors were trained faculty volunteers, playing roles outside their usual academic positions. Faculty facilitated scenarios by posing questions as cues related to desired learning outcomes as scenarios unfolded.

Eleven nursing PhD students and 6 faculty participated. Debriefing facilitated discussion of RCR principles, common research quandaries, and suggested scenario revisions. Faculty, expert observation, and video-review showed that younger and less experienced students tried to give the “right” answer rather than implement RCR appropriate solutions. Students with more clinical experience had difficulty adopting the less familiar researcher role. Overall, simulation is a novel and useful way to enhance RCR content in PhD programs. (Index words: Responsible conduct of research; Ethics; Simulation; PhD nursing education; Scientific education) J Prof Nurs 0:1–6, 2016. © 2016 Elsevier Inc. All rights reserved.

RESPONSIBLE CONDUCT OF research (RCR) commonly known as *ethics training* is an essential

component of graduate scientific education and a critical component of professional behavior (Anderson et al., 2007; Heitman & Bulger, 2005; Peirce & Smith, 2013; Stenick, 2007). However, while simulation has become a standard educational approach to teach clinical nursing skills, little has been done with this approach in nonclinical programs, for example doctor of philosophy (PhD) programs offering scientific educational preparation (Fanning & Gaba, 2007; Horvancsek, 2007). In PhD programs, ethics education is traditionally didactic and is a component of the core curriculum early in a student's course of study. However, when students move forward to the implementation phase of their dissertation, we have found that questions persist or arise regarding application of these principles. Revisiting the application of RCR principles prior to students beginning their independent research may help students navigate unexpected “real life” situations, facilitating

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ethical and appropriate solutions to commonly encountered research situations.

Purpose

The overarching purpose of this project was to develop, implement, and evaluate two simulated scenarios in PhD education. Scenarios incorporated potential areas of confusion and common questions about RCR previously observed by PhD program faculty during supervision of dissertation research. Facilitating student application of RCR principles prior to conducting their dissertation research has the potential to decrease risk for inadvertent research misconduct.

Simulation Pedagogy

Simulation is a common approach to providing active, experiential learning. When designing simulation exercises, it is essential to match the complexity of the scenario and the content of the scenario to learner needs, creating a situation that is challenging but not overwhelming (Jeffries & Rogers, 2007). An education matrix is a novel tool that is useful for calibrating a simulation-based experience. With lesser expertise, basic knowledge is provided. As expertise is attained, the focus on knowledge lessens, shifting to essential and supporting competencies, which also lessen as expertise increases and, finally, to increasingly complex challenges that are presented to the most experienced learner. Figure 1 illustrates the shift from knowledge to competency to challenge and presentation of increasing complexity as learner expertise is attained. Increasing complexity is indicated by more + marks in the table. This approach is based on a task analysis framework that has been used to structure simulation-based training in the U.S. Air Force (Alliger, Beard, Bennett, Colegrove, & Garrity, 2007) and models of skill acquisition (Dreyfus, 2004; Dreyfus & Dreyfus, 1980) (Figure 1).

An educational matrix accounts for increments in skill performance based upon experience and education, allowing us to build scenarios that matched our student needs and experience level and evaluate student performance. Because our participants were PhD students who had completed didactic ethics training, we focused on

presenting more research challenges rather than basic knowledge. This approach to development helped us create scenarios that would assist students to apply their knowledge to potential research quandaries that might occur during the conduct of their independent research.

The final step in simulation-based education is to debrief participants. Debriefing and feedback are considered to be the most important phase of experiential learning (Cheng et al., 2014). Facilitated structured debriefing helps learners to reflect on their performance and consider what the experience means in terms of future practice (Decker et al., 2013). Ideally, debriefing occurs in a psychologically safe environment with a skilled facilitator focused on the identified learning outcomes (Decker et al., 2013).

Methods

As a direct result of expressed faculty concerns about retention of ethical content based on supervision of students conducting their dissertation research, a task force of nursing PhD program faculty was formed. Simulation was suggested as one way to help students apply learned ethical principles; thus, simulation faculty and experts joined the task force. After robust discussion of commonly experienced ethical dilemmas, two scenarios were developed. Although this project was educational in nature, we obtained institutional review board (IRB) approval so that we could more widely disseminate findings from this novel approach to scientific ethical education. Another reason for obtaining IRB approval was to role model what we were teaching students.

Scenarios were piloted with 11 second and third year nursing PhD students who had not yet begun their dissertation research. The simulation laboratory provided a safe controlled environment where students could apply learned didactic principles of RCR, offering faculty a way to further integrate RCR principles into our PhD program. As is customary in simulation pedagogy, we used videotaped scenario observational data to evaluate student performance in relation to an educational attainment matrix. Grades were not assigned to student participants. To help us appreciate how we might

Content Stratification	Challenges				++	+++
	Supporting Competency			++	+++	++
	Essential Competency		++	+++	++	+
	Skill	++	+++	++	+	
	Knowledge	+++	++	+		
		Novice	Adv. Beg	Competent	Proficient	Expert
Learner Developmental Level 						

Figure 1. Educational Matrix indicating a shift from the provision of basic knowledge to complex challenges as learner expertise increases.¹¹ Used with permission of Mayo Foundation for Medical Education and Research, all rights reserved.

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