Scientific Inquiry in Nursing Education: Generating Simulation Evidence

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This presentation is based on the book chapter:
Session Objectives

Upon completion of this session, the participant will be able to:

• Describe the current state of the science in simulation research
• Identify research priorities in simulation that contribute to advancing the science of nursing education
• Discuss the foundations of a well-conducted simulation study
“I cannot recall another point in the history of nursing education research in which formalized, concerted efforts to establish an evidence base for best practices to advance the science of nursing education has occurred as we are experiencing now with the output of evidence being generated through simulation-based research.”

Mary Ann Cantrell, PhD, RN, FAAN

Current State of the Science

• Evidence supports the use of simulation in nursing education as an effective teaching-learning strategy when best practices are employed (Cant & Cooper, 2010).

• Although the science is advancing, there are still a plethora of:
  • single-site studies
  • studies that report student and faculty satisfaction, self-efficacy, and self-confidence
  • pilot studies
“The use of simulation in nursing education is still being developed, making this not only an opportune time to conduct simulation research, but also a crucial time for rigorous research studies that establish evidence-based practices related to simulation.”

Tonya Rutherford-Hemming, EdD, RN, ANP-BC, CHSE

Current State of the Science

• Research priorities
  • The National League for Nursing (NLN), International Association for Clinical Simulation and Learning (INACSL), and the Society for Simulation in Healthcare (SSH) have identified research priorities in simulation
  • Focus is on:
    • multi-site studies
    • studies using pilot tested, valid, and reliable simulations
    • use of valid and reliable instruments to measure outcomes
    • educational outcomes beyond satisfaction, self-efficacy, and self-confidence
    • research that translates to patient and healthcare outcomes
Foundation for Conducting a Simulation Study

- A project or strategic plan
- A rigorous study design
- Adherence to the INACSL Standards of Best Practice: SimulationSM (2016)

A good project starts with a strategic plan, and includes:

- project team
- key stakeholders
- vision, goals, and objectives of the project/study
- resources and supplies
- funding
- anticipated obstacles, barriers, and strengths
- evaluation of project/strategic plan

A rigorous study design has 3 overarching elements:

• Development
• Implementation
• Dissemination of results

These include:

• conceptualization; design and planning; implementation of the study; collection, analysis, identification, and interpretation of the data; and dissemination of findings

The INACSL Standards of Best Practice: Simulation are critical to planning, implementing, evaluating, and disseminating simulation-based innovations, and research.

- The Standards were designed to guide best practice in simulation design, implementation, and evaluation.
- As we move towards high-stakes testing in simulation, it is critical that we pay attention to the standards, and use reliable and valid scenarios, and instruments.

“Simulation-based education, like all educational methodologies, should be based on the best available evidence. Drawing on a rich body of evidence from diverse fields as well as research in healthcare simulation, the INACSL Standards of Best Practice: Simulation℠, provide guidance to healthcare simulation educators in all disciplines.”

Mary Fey, PhD, RN,CHSE

“Using a standardized process for designing, implementing, debriefing, and evaluating simulation activities is key to having a successful and reliable simulation program. This process also supports successful simulation research activities.”

Colleen Meakim, MSN, RN, CHSE

Identifying and developing a compelling problem statement is the catalyst for the study. This is supported by:

- a review of the literature to identify gaps and areas of saturation
- background and significance of the problem
- the ability to generalize the findings to a broader population
The theoretical or conceptual framework provides a structure or context for how the study is conducted (Polit & Beck, 2012).

Theory as well as the study outcomes of research builds a body of knowledge within a theoretical context to help explain results and develop new knowledge (Fain, 2015; Rourke et al., 2010).

In 2015, 55% of published studies reported use of a theoretical or conceptual framework (Fey, Gloe, & Mariani, 2015).

Examples are: learning theories, NLN Jeffries Simulation, Benner’s Model of Novice to Expert practice (Benner, 2008; Jeffries, 2016).
Study Elements

- Research Questions/Hypotheses
  - These guide the study and drive the design

- Methodology is determined prior to the study and includes:
  - Sample and setting
  - The simulation intervention based on SOBP
  - the type of measurement
  - data collection and analysis

- Measurement of outcomes
  - Use of valid and reliable instruments is critical

- Reporting of results and dissemination
Challenges and Barriers

- Funding and resources (time, people, and space)
- Lack of research experience, mentors and administrative support
- Competing responsibilities of teaching, scholarship, and service, plus fewer faculty
- Lack of standardization across curricula making multi-site studies challenging
- Simulation research relies heavily on student participants
“The use of simulation in nursing education is increasing without much consideration on how it will be appropriately integrated into curricula or how it will improve student learning outcomes. Simulation based learning activities and evaluation strategies need to be thoughtfully constructed and based on established guidelines, best practices and the growing evidence derived from rigorously designed research.”

Barbara Aronson, PhD, RN, CNE

Nurse faculty and investigators can be at the forefront in conducting rigorous, quality, theory-based simulation research. There is an increasing demand for evidence supporting positive outcomes in simulation in terms of student outcomes, patient outcomes, and patient safety.

It can be difficult for an individual investigator to address these challenges, but with collaboration, nurse faculty can create rich environments of scholarship to translate excellent nursing education into safe, quality patient care with excellent outcomes.
Comments and Questions???


Thank You

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