Clinical Simulation in Nursing (2018) 21, 16-22

Clinical Simulation in Nursing

www.elsevier.com/locate/ecsn

Featured Article

A Toolbox to Make Multisite Simulation Research Successful

Ashley E. Franklin, PhD, RN, CNE, CHSE[a,*], Caitlin Dodd, MSN, RN[a], Stephanie Sideras, PhD, RN[b], Jeremy Hutson, BSN, RN[c]

[a]*Texas Christian University, Fort Worth, TX 76129, USA*
[b]*Oregon Health & Science University, Ashland, OR 97250, USA*
[c]*Kaiser Sunnyside Medical Center, Clackamas, OR 97015, USA*

KEYWORDS
simulation;
research;
multisite;
technology;
logistics

Abstract

Background: This paper reviews practical strategies for implementing technology and provides recommendations for onsite logistics in a multi-site simulation research collaboration. A small body of literature supports multi-site simulation research and provides direction for research organization, data collection, and communication. There is a gap in the literature relating to multi-site, multiple-patient simulation collaborations, even though multiple patient simulation is a hot topic at professional nursing education meetings.

Methods: The research team conducted a multi-site, multiple patient randomized control trial pilot and full-scale study in 2016 with relatively small funding resources and administrative overhead.

Results: Researchers from two schools of nursing assembled a tool box to guide the planning, implementation, data management, and dissemination phases of research, including practical strategies for success and alternative solutions to overcome challenges encountered.

Conclusion: This conceptual paper enables readers to consider how a systematic approach ensures consistency across multiple data collection sites.

Cite this article:
Franklin, A. E., Dodd, C., Sideras, S., & Hutson, J. (2018, August). A toolbox to make multisite simulation research successful. *Clinical Simulation in Nursing, 21*, 16-22. https://doi.org/10.1016/j.ecns.2018.05.003.

Critiques of nursing research frequently characterize studies as small with samples from a single institution. Small sample size in simulation studies is problematic because it limits nurse researchers' ability to impact the science with results that are generalizable to diverse groups of nurses. One cause of the small sample size problem is that nursing education research usually garners minimal external funding from government agencies and private foundations (Broome, Ironside, & McNelis, 2012; Mealer, Flynn, Ironside, & Spurlock, 2017); restricted external funding often means that researchers only recruit a small number

Funding: This work was supported by the National League for Nursing, Alma Moreton Research Grant, Fort Worth, TX.

The authors have no further conflicts of interest or financial disclosures to report.

* Corresponding author: a.b.edge@tcu.edu (A. E. Franklin).

1876-1399/$ - see front matter
https://doi.org/10.1016/j.ecns.2018.05.003

of participants from one academic setting. A second cause of the problem is that external funding often allocates minimal dollars for travel related to data-collection expenses (Oermann et al., 2012). To overcome these challenges, multi-site collaboration offers access to larger and more diverse samples to attract additional external funding and increase generalizability of findings. As researchers strive to build a body of evidence that demonstrates transfer of simulation learning to practice and ultimately to patient outcomes (Cantrell, Franklin, Leighton, & Carlson 2017), the need for multi-site collaboration will greatly increase.

Key Points

- Integrating technology at each phase of the research process enabled multi-site collaboration on a small budget.
- Monitoring fidelity to the protocol allowed researchers to consistently implement simulation at multiple data collection sites.

Few recommendations exist in the field of simulation to enable successful multi-site collaboration. Large-scale and international research groups have found success using online resources (Cheng et al., 2011a; Cheng, Nadkarni, Hunt, & Qayumi, 2011b; Lasater, Johnson, Hodson-Carlton, Siktberg, & Sideras, 2012). Specifically, a pediatric simulation collaboration group developed online resources to assist with research organization, data collection, and communication (Cheng et al., 2011b). Additional multi-site simulation research projects highlight the importance of onsite committees (human resources) to oversee protocol implementation, communicate, and mitigate potential threats to internal validity, such as varied research team members, manikin fidelity, and environmental fidelity (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014; Lasater et al., 2012).

Simulation researchers have established special interest groups at professional meetings to share resources and foster multi-site collaboration. An interprofessional group of early adopters for multi-site collaboration paved the way for pediatric resuscitation multi-site simulation research collaboration in North America (Cheng et al., 2011a). Cheng et al. (2011a) cite meaningful benefits of research networks and collaborations, such as access to larger samples, increased generalizability of findings, additional funding opportunities, access to diverse experience of collaborators, and regular planned communication focused on timely research agendas to move the science forward. The context of this article is a multisite research collaboration from two schools of nursing in the United States (US) which implemented a pilot and full-scale multiple-patient simulation research trial with relatively small funding resources and administrative overhead. The purpose of this article is to review practical strategies for implementing technology to facilitate communication between researchers at multiple data-collection sites and to present recommendations for onsite logistics in simulation research.

Overview of Multiple-Patient Simulation Study

A brief description of the study will provide a foundation for understanding how collaborators used technology and managed logistics across multiple sites. Seventy-three senior, undergraduate, prelicensure novice nurses completed the study protocol. They represented two schools of nursing in different regions of the United States. The design was a three-group, randomized control trial to test the effectiveness of three simulation preparation interventions on novice nurses' competence and self-efficacy for providing care to multiple patients in an acute care simulation setting. Participants were randomly assigned to groups, and intervention materials were delivered on a learning management system (LMS) with which participants were familiar. Participants' exposure to the intervention was similar in terms of time frame and intervention dose. All participants received weekly reminders to access study materials on the LMS, and the LMS tracked the number and amount of time participants accessed study materials.

Simulation-support staff meticulously controlled three manikins, actors, simulation laboratory setup, and audio/visual recordings to minimize threats to internal validity. The research team traveled to both the data-collection sites, and the same two blinded raters scored all participants before test and after the four-week online intervention. The same team member served as the voice of the manikins at both the research sites. The primary differences in terms of the research team at each site were the simulation technicians who provided audio/visual support and actors who portrayed the role of unlicensed assistive personnel. Such changes in the research team, combined with variations in simulation the laboratory setup and audio/visual platforms, contributed to challenges in replicating the study protocol. As a result, the research team elected to have one day at each site before data collection for orientation to the space and just-in-time checks of protocol fidelity.

Two researchers securely transferred data and prepared data for analysis. Data artifacts included paper and pencil versions of the Creighton Simulation Evaluation Instrument (CSEI; Todd, Manz, Hawkins, Parsons, & Hercinger, 2008) that is used to score participants' competence, a modified National League for Nursing Student Satisfaction and Self-Confidence in Learning Scale (Jeffries & Rizzolo, 2006), and a paper demographics questionnaire. Two researchers double-checked data entered into a Microsoft® Excel database for accuracy and then used Box.com to securely share data files with team members in multiple locations. Box.com is a secure file-sharing workspace; researchers