



Review

Using Simulation for Clinical Practice Hours in Nurse Practitioner Education in The United States: A Systematic Review



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SUMMARY

Objectives: The National Organization for Nurse Practitioner Faculty (NONPF) does not allow simulation to be used in lieu of traditional clinical hours. The NONPF cites a lack of empirical evidence related to learning outcomes with simulation as rationale for its stance. The purpose of this systematic review was to search, extract, appraise, and synthesize research related to the use of simulation in Nurse Practitioner (NP) education in order to answer the two following questions: 1) What research related to simulation in NP education has emerged in the literature between 2010 and April 2015?, and 2) Of the research studies that have emerged, what level of Kirkpatrick's Training Evaluation Model (1994) is evaluated?

Design: This review was reported in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

Data Sources: A literature search was completed in PubMed and CINAHL using a combination of medical subject headings, or Mesh terms, as well as keywords to retrieve non-indexed citations.

Review Methods: The inclusion criteria for this review were broad in order to disseminate information on future research needed. The review considered studies related to NP education that included any form of simulation intervention, e.g. role-playing and standardized patients. The review considered studies that described original research, but no other design restrictions were imposed. The review was limited to studies published in the English language.

Results: The database search strategy yielded 198 citations. These results were narrowed down to 15 studies based on identified inclusion criteria.

Conclusions: There is a lack of empirical evidence in the literature to support using simulation in lieu of direct patient care clinical hours in NP education. The evidence in this systematic review affirms NONPF's statement. Five years after the inception of NONPF's position statement, research to support learning outcomes with simulation in nurse practitioner education remains lacking. There is a need to produce rigorous scientific studies in the future in order to provide quantitative support to allow simulation to be counted as clinical hours in NP programs.

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Introduction

Students currently enrolled in a nurse practitioner (NP) program in the United States (U.S.) are required to have a minimum of 500 supervised, direct patient care clinical hours (National Task Force on Quality Nurse Practitioner Education, 2012). Direct patient care excludes the use of simulation as a means to meet the mandated 500 clinical hours. Still, many nurse practitioner programs use simulation as a component of their delivery of NP education. These simulation hours are in addition to, rather than a replacement of clinical

hours. Simulation is an accepted technique of providing clinical education in nursing undergraduate programs (Hayden et al, 2014) and is used as a component of medical curriculums (Barsuk et al., 2009, 2012).

In 2010 the National Organization of Nurse Practitioner Faculties (NONPF, 2010) documented the organization's position on the use of simulation in lieu of direct face-to-face patient care for clinical education. NONPF presented a brief overview of the benefits of simulation including: a safe practice environment, repeated practice, and exposure to limited patient diagnoses and procedures in practice; as well as perceived disadvantages associated with simulation including: the inability to create human characteristics (facial expressions and nonverbal communication) with a simulator, and the compression of time that simulation generates. NONPF's position on the use of simulation as a substitute for clinical practice hours was grounded by the "Criteria for Evaluation of Nurse Practitioner Programs" (National Task Force on

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Quality Nurse Practitioner Education, 2008). NONPF summarized the NTF Criteria as follows:

At this time, there is neither research supporting the replacement of direct care clinical practice hours with patients using clinical simulations nor inquiry as to including clinical simulation hours as replacing direct care clinical hours. However, empirical inquiry as to the quality and value of learning with the use of simulation would provide greater insight into comparative learning comparing experiences learned in simulation as opposed to direct clinical care hours. (2010, p. 24) Ultimately, NONPF's conclusion on simulation was...there is a need at this time, for more evidence regarding learning outcomes before support can be given to use simulation as an "equivalent" to traditional "hands on" clinical hours. Due to the lack of evidence regarding simulation and the learning outcomes of nurse practitioner education, the NONPF Board of Directors supports the NTF Criteria (2008)... (NONPF, 2010, p. 24).

2015: Five Years Later, Where Are We?

The National Task Force on Quality Nurse Practitioner Education (NTF) published an update in 2012, upholding the requirement that NP students fulfill a minimum of 500 supervised *direct patient care clinical hours*. Still, the use of simulation in clinical education continues to manifest in professional dialogue as educators struggle to determine the best method to provide and evaluate evidence based practice core competencies (NONPF, 2012) in NP education.

In a special meeting during the a 2013 annual NONPF conference, attendees voiced opinions on "how the forthcoming editions of the *Criteria for Evaluation of Nurse Practitioner Programs* and other program resources may need to evolve to support NP education models for the future" (NONPF, 2013, p. 1). While participants were divided as to whether simulation should count in the minimum required clinical hours, simulation was a common theme in many poster and podium presentations at the 2013 conference, including at the 2013 conference, including one conference track dedicated to Technology.

Within the academic leadership, there are conflicting recommendations regarding the use of simulation in NP programs. The American Association of Colleges of Nursing (AACN) is the accrediting body for Nurse Practitioner programs. The Essentials of Master's Education in Nursing (2011) states:

All graduates of a master's nursing program must have supervised practice experiences that are sufficient to demonstrate mastery of the Essentials. The term "supervised" is used broadly and can include precepted experiences with faculty site visits. These learning experiences may be accomplished through diverse teaching methods, including face-to-face or simulated methods. These learning experiences can also occur using simulation designed as a mechanism for verifying early mastery of new levels of practice or designed to create access to data or health care situations that are not readily accessible to the student... The simulation is an adjunct to the learning that will occur with direct human interface or human experience learning." (p. 30).

Hawkins-Walsh et al. (2011) conducted a survey of all pediatric Nurse Practitioner programs in the United States (US). Seventy-five (65%) PNP program directors in the country completed the survey, and findings indicated that all of those who responded used simulations as a teaching modality in their acute care pediatric nurse practitioner programs, and 85% used simulation in their primary care pediatric programs. Some reasons for supporting use of simulation in nurse practitioner (NP) programs are related to increased competition for preceptor sites, the ability to provide and evaluate equivalent clinical experiences to all students, and to allow students practice with low frequency or high-risk events. In the Masters Essential III: Quality

Improvement and Safety competency, an example of sample content includes "Simulation training in a variety of settings (e.g., disasters, codes, and other high-risk clinical areas)" (AACN, p.15).

For simulation to be useful as an adjunct to current educational methods such as lecture, case studies, and clinical experiences, it has to demonstrate its utility in producing improved outcomes. The Kirkpatrick model provides a framework for categorizing outcome criteria of educational training (Praslova, 2010). Level 1, Reaction outcomes, involves the perceptions of the trainee. These outcomes include levels of satisfaction with the training, and perceptions of how much trainees learned during the training. Level 2, Learning outcomes, include both knowledge tests and immediate post-training performance measures. Both level 1 and 2 outcomes measure short-term changes. Level 3, Behavior of Transfer outcomes, includes behavior changes incorporated into the work or clinical environment. At this level it is determined if the learning that occurred in the educational setting transfer to the work or clinical setting (Rutherford-Hemming, 2012). The last level is Level 4, the Results outcomes. Level 4 outcomes are both highly desirable and very difficult to evaluate, and include changes in organizational outcomes. In the healthcare arena, Level 4 evaluates if the learning transfers to the clinical setting and improves patient outcomes (Praslova, 2010; Yardley and Dornan, 2012).

The purpose of this systematic review was to search, extract, appraise, and synthesize research related to the use of simulation in NP education in order to answer the two following questions:

- 1) What research related to simulation in NP education has emerged in the literature between 2010 and April 2015?
- 2) Of the research studies that have emerged, what level of Kirkpatrick's Training Evaluation Model (1994) is evaluated?

Methods

This review was reported in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Liberati et al., 2009).

Aim of Review

The aim of this systematic review was to investigate and to synthesize research completed in the last five years to report the current state of the science related to simulation in NP education.

Eligibility Criteria

The inclusion criteria for this review were broad in order to disseminate information on future research needed. The review considered studies related to NP education that included any form of simulation intervention, e.g. role-playing, standardized patients, etc. The review considered studies that described original research, but no other design restrictions were imposed. The review was limited to studies published in the English language.

Search

A literature search was completed in PubMed and CINAHL using a combination of medical subject headings, or Mesh terms, as well as keywords to retrieve non-indexed citations. The PubMed strategy included ("Nurse practitioners/education"[Mesh] OR ("nurse practitioner*" AND "education")) AND ("Patient simulation"[Mesh] OR "patient simulation*" OR "standardized patient*" OR "simulated patient*"). The CINAHL search was similar, using CINAHL subject headings in combination with keywords "nurse practitioner" OR (MH "Nurse Practitioners +/ED") OR (MH "Education, Nursing, Graduate+") OR TX nurse practitioner education OR TX graduate nursing education AND (MH "Patient Simulation") OR "patient simulation" OR TX simulated patient* OR TX standardized patient* OR TX patient simulation OR TX high

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