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Short Communication

After-Hours/On-Call Simulation in Primary Care Nurse Practitioner Education

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Abstract

Background: Providing after-hours/on-call patient triage and management services is an expected responsibility for nurse practitioners (NPs). Opportunity to facilitate clinical practicum experience which includes this independent patient-management skill is uncommon in NP programs. Literature describing simulation in primary care NP education is limited.

Method: One-year postgraduation surveys were sent to participants to assess the effect of the simulation on participant employment selection. Primary care NP students across three patient populations, adult/geriatric, family, and pediatrics, comprise the single-school cohort of participants (N = 29).

Results: After-hours/on-call duties were identified as a requirement of their current NP role in 47% of participants; 14% specifically avoided a position with an after-hours/on-call component.

Conclusions: The after-hours/on-call simulation allows NP students to gain valuable experience with independent decision-making in a safe environment laden with unpredictability and the need for critical thinking.

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Simulation permeates nursing education and is considered a standard teaching mechanism in undergraduate nursing curricula. Within nurse practitioner (NP) education, however, simulation seems to be limited. A systematic review by Rutherford-Hemming, Nye, and Coram (2016) identified 15 studies published between 2010 and 2015 addressing NP education and any level of simulation. Critical care NP students were identified as participants in five of the 15 studies (Rutherford-Hemming et al., 2016). Over half of the studies reviewed included the use of standardized patients either alone or in conjunction with some other simulation modality (Rutherford-Hemming et al., 2016). Outcomes reported consist of increase in knowledge, competency, and learner satisfaction. Appraisals of the available

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literature found small sample sizes, lack of validated outcome tools, and evaluation measures that are limited to Kirkpatrick Levels one or two (reaction or learning) rather than addressing change in behavior and outcome measures.

Key Points

- Literature describing simulation in primary care nurse practitioner education is limited.
- The after-hours/on-call simulation allows nurse practitioner students to gain valuable experience with independent decision-making in a safe environment laden with unpredictability and the need for critical thinking.

Warren et al. (2016) conducted a systematic review of focusing on high-fidelity simulation literature specific to NP education, without limiting the date of publication. After excluding certified registered nurse anesthetist studies and those including standardized patients and low-fidelity simulation, 10 manuscripts met criteria for review. Studies reviewed represented single-simulation educational events, and one study that included four scenarios was separated by several weeks (Warren et al., 2016). Only two studies simulated a primary care setting, and only one simulated a low-acuity scenario. Evaluation outcomes included knowledge, attitudes, skill performance, and learner satisfaction (Warren et al., 2016).

Simulation in primary care NP education is limited, with literature describing large-group simulation (Garnett, Weiss, & Winland-Brown, 2015), students working in teams, and observation of clinical management. Nursing education textbooks may provide scenarios to be used as in-class case studies or simulation cases aimed for either active participation or observations (e.g., Simulation Scenarios for Nursing Educators, Campbell & Daley Eds.). Pittman (2012) described use of standardized patients and technologic simulators in an asthma-based scenario. Standardized patients are individuals trained to consistently portray a patient or other individual in a scripted scenario for the purpose of instruction, practice, or evaluation (INACSL Standards, 2016). Pittman described NP students being guided through a scenario with active facilitation from faculty and debriefing after the event (Pittman, 2012).

The role of providing after-hours/on-call patient triage and management is an expected responsibility for NPs. Providing real patient clinical experience to practice this independent patient-management skill is not common in NP programs. Literature describing the opportunity to teach or simulate after-hours/on-call skills in NP education is limited and focuses on interdisciplinary interactions and communication skills, not patient management (Fisher, Martin, & Tate, 2014). Yuasa et al. (2013) described a curriculum of geriatric role-playing case exercises featuring conditions commonly managed in nursing home patients. The interdisciplinary cases last 2 to 3 hours and included physician and NP interactions with nursing home clinical staff. Rutledge, Haney, Bordelon, Renaud, and Fowler (2014) expanded the concept of telephone management to telehealth where standardized patient simulation is aimed at meeting the need of rural patients.

The theoretical framework for this simulation was Kolb's experiential learning theory (Kolb, 1984). Kolb asserted that learning occurs in a four-stage cycle and involves attainment of concepts and experiences that provide the learner the flexibility to implement their knowledge in a variety of situations.

To our knowledge, this is the first example in the literature of an after-hours/on-call simulation with outcome data directed at employment choice.

Sample

Primary care NP students in the adult/geriatric, family, and pediatric programs at Villanova University are required to complete the after-hours/on-call simulation during the last semester of their education. Standardized patient simulations are introduced in the NP curriculum during prior courses (e.g., physical assessment). Participation in the research to assess the assignment was voluntary. In 2016, there were 32 students across the three programs, 29 completed the preassignment and postassignment assessment, and 21 students completed the 1-year follow-up survey.

Methods

Course faculty coordinated the schedule and recruited standardized patient callers to serve as either patients or caregivers of patients. The assignment takes place over 1 week with several callers and students scheduled each day. The callers used patient scenarios developed by the NP faculty to portray patients with illness or health care questions during a time when their fictitious primary care office was closed. Scenario details such as the office being closed for renovations and an electronic medical record program upgrade prevents students from referring patients to come to the office for a ''sick visit.'' Students were oriented to the assignment via written description in the syllabus and were given the opportunity to ask clarification questions during classes conducted the week before the assignment. Students selected a single 15-hour period (7 AM to 10 PM) during which they manage any after-hours/on-call issues that the fictitious primary care office might receive. Number of calls ranged from three to five per student. No equipment other than personal mobile phones and e-mail access are required for the student or caller.

The NP students are instructed to elicit an appropriate history, develop a plan for patient management, provide appropriate patient education including potential diagnosis, recommend over-the-counter or prescription medications if indicated, and deliver instructions for follow-up. After the encounter, the students were required to submit an encounter note via e-mail to their clinical faculty. Reflective journaling after the assignment was used to reinforce learning and to foster classroom debriefing and discussion after all students completed the assignment. Use of fictitious patients and scenarios eliminate patient privacy concerns related to the use of e-mail for encounter notes. A detailed description of the process and lessons learned in developing the after-hours/on-call simulation was described in Kelly, Blunt, & Nestor, 2017.

Student evaluation of the after-hours/on-call simulation included preparticipation and postparticipation perception evaluation developed based on anecdotal experience with the assignment in previous years. Standardized patient callers evaluation was completed using a checklist developed by faculty to identify essential components of history, patient safety, and decision-making. The 1-year follow-up survey was developed to quantify the effect of the simulation experience on employment selection and role preparation.

The proposal was reviewed by the Villanova University Institutional Review Board and determined to be programmatic development and not human subject's research. The Villanova Institute of Teaching and Learning provided financial support.

Results

The preparticipation surveys (N = 29) identified a cohort of students with minimal to no prior on-call experience (90% with no experience), with a universal sense of nervousness and anxiety, and with a sense that clear communication, critical thinking, and self-confidence were skills needed for this experience. Most planned to stay home during their assigned shift (41%). In the postparticipation survey, 1 week after the experience, students (N = 29) were unanimous that the assignment was worthwhile, more than half (59%) responded that the actual stress was less than perceived stress of the experience, and 93% specified that they would consider an NP position with an on-call role after graduation (Table 1).

Simulated callers evaluation identified that students omitted family (62%), social history (57%), and barriers to adherence (50%) most often. Less frequent items omitted included pharmacologic and nonpharmacologic management (32%), medications (27%), allergies (25%), addressing patient's additional questions (27%), checking patient's understanding of the recommendations (25%), past medical history (22%), and providing educational information (22%).

One year after graduation, 21 participants completed the follow-up survey (72% response rate), and 81% of respondents were employed either full- or part-time. The majority (73%) described their role as primary care providers, with the others in specialty settings. Participants were asked if the after-hours/on-call simulation presented a realistic representation of the role in their current practice. Majority indicated that the assignment was a realistic (85%), and some indicated it as somewhat realistic (15%). One respondent working in primary care shared that "*I cover a lot of triage calls during the day, so student experience was very realistic*." Another working in primary care stated, "*The situations and complexity were similar to situations I have encountered in practice on call*."

After-hours/on-call duties were identified as a requirement of their role in 47% of the participants, with time commitments ranging from one night per month to six nights per month, in a variety of formats. In regard to employment selection after graduation, 14% of respondents specifically avoided a position with an after-hours/on-call component based on their experience with this assignment during school. One NP graduate, who is currently unemployed responded, "*I did not want the additional responsibility of call or after hours due to wanting to be present at home when I am home*." The assignment had a positive influence on the perception of the after-hours/on-call component in NP role in 71% of respondents. One NP revealed that that "*the assignment made me less nervous about the prospect of taking call—It is impressive to employers when they hear you've done this assignment*."

Conclusion

Systematic reviews by both Rutherford-Hemming et al. (2016) and Warren et al. (2016) assert that evaluation of nursing simulation research when viewed using the Kirkpatrick Levels of Evaluation was often limited to reaction and learning levels and lacks behavior and outcome-level data. The 1-year follow-up survey provided outcome-level analysis related to employment selection and role preparation related to NP simulation research.

The after-hours/on-call simulation allowed NP students to gain valuable experience with independent decision-making ability in a safe environment laden with unpredictability and the need for critical thinking. Use of standardized patients and scenarios enables the NP student to practice a skill that is expected by employers, yet not found in the curriculum of many primary care NP programs. In keeping with Kolb's experiential learning theory, the simulation provides a concrete experience upon which the

Table 1 Preparticipation and Postparticipation Survey

Student Responses to Questions	Preparticipation	Postparticipation
Previous experience		
Have you ever been in a nursing role that encompassed an on-call requirement?		
Yes	10%	
No	90%	
Time management		
How do you plan on managing your on-call period?		
Staying home for the entire 15-hour period	41%	38%
Being on-call during class or clinical	31%	28%
Being on-call while at work	14%	14%
Treating it like a normal day	14%	20%
Emotions		
Please describe your feelings about being on call for this assignment?		
Please prioritize your top three choices*		
Anxious	23	23
Nervous	26	24
Excited	2	10
Curious	20	24
Calm	5	4
Did your anticipated stress of the on-call experience match that of the actual experience?		
Equal		41%
Less		59%
More		0%
Skills needed		
What do you believe are the top 3 skills/needs to successfully manage an on-call time block for a primary care practice?*		
Time management	10	4
Critical thinking	25	28
Clear communication	27	26
Access appropriate references/resources	11	10
Self-confidence	13	16
Privacy	1	1
Professional outcome		
Did you find this a worthwhile learning experience?		
Yes		100%
No		
Would you consider accepting employment in a practice that has an on-call requirement?		
Yes		93%
No		

* Frequencies listed.

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students may reflect and develop plans for future encounters. As identified by the 1-year follow-up responses, the students used this experiential learning in their clinical practice.

This study was limited by the small cohort-based sample; however, the assignment provides innumerable opportunities for expansion. Based on recommendations from students, development of additional patient scenarios to include calls from nursing home staff with changes in patient status, follow-up calls from patients seen earlier in the day, and a wider variety of conditions are in process. The use of live video visits with standardized patients and photos of rashes, visual symptoms, or injuries sent by the standardized patient to supplement the history is being explored. Further research in this style of applied simulation in advanced practice nursing education should include other patient populations and a more in-depth analysis of the effect on role selection and performance.

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